APPENDIX OF EXHIBITS FOR UGSI STATEMENT OF UNDISPUTED FACTS IN SUPPORT OF ITS MOTION FOR SUMMARY JUDGMENT

Exhibit A: Affidavit of UGSI Vice President of Engineering & Technology Thomas R. Marti

Exhibit B: Transcript of October 23, 2015 Deposition of Eugene Palermo

Exhibit C: Palermo's Answers to Interrogatories

Exhibit D: Excerpt from Transcript of December 29, 2015 Deposition of Alliance for PE Pipe Executive Director Peter Dyke

Exhibit E: Palermo's Response to Requests for Admission

Exhibit F: Palermo Slide Show

Exhibit G: UGSI's Second Set of Requests for Admission

Exhibit H: Excerpt from Transcript of March 14, 2016 deposition of Dr. Pat Leevers

Exhibit I: Dale Edwards Expert Report

Exhibit J: Steve Ferry Expert Report

Exhibit K: ISO 13477, principle 5

Exhibit L: Excerpt from Transcript of March 22, 2016 Expert Deposition of Eugene Palermo

Exhibit M: Eugene Palermo email to Wes Long

Exhibit N: Excerpt from Transcript of December 4, 2015 Deposition of Julie Morrison

Exhibit O: Julie Morrison email to Dan Christensen

Exhibit P: Excerpt from Transcript of November 24, 2015 Deposition of Steven Verseman

Exhibit Q: Steve Verseman email to Dan Christensen

Exhibit R: UGSI Cease and Desist Letter to Eugene Palermo

Exhibit S: Eugene Palermo email to Robert Walker

Exhibit A

IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF ILLINOIS

UNDERGROUND SOLUTIONS, INC., a Delaware corporation, Plaintiff, v. EUGENE PALERMO, a/k/a GENE PALERMO, Defendant.	Case No. 13-cv-8407 Judge Matthew Kennelly

AFFIDAVIT OF PROOF PURSUANT TO
FEDERAL RULE OF CIVIL PROCEDURE 56(C)

I, Thomas R. Marti, after having been duly sworn state that if I were called to an evidentiary hearing, I would competently testify on the basis of personal knowledge to the following:

1. I am employed by Underground Solutions, Inc. ("UGSI") as Vice President of Engineering & Technology.

2. My job duties include the management and oversight of the engineering functions for Fusible PVC®; and the development and maintenance of the technologies for Fusible PVC®.

3. I am familiar with the allegations of this lawsuit and the harm suffered and expense incurred as a result of the Defendant, Eugene Palermo's, false and misleading statements about UGSI products.

4. UGSI is a Delaware corporation with its principal place of business in Poway, California.

5. In February, 2016, UGSI was acquired by Aegion Corporation, which is based in St. Louis, Missouri.

6. UGSI is the sole manufacturer of Fusible PVC® Pipe, a thermally butt-fused polyvinyl chloride pipe that is implemented by third parties in applications in the water, wastewater, electrical and telecommunications industries.

7. UGSI sells thermally butt-fused PVC pipe under various trade names, including

Fusible PVC® Pipe, FPVC®, Fusible C-900®, and Fusible C-905®, depending on the intended use of the pipe.

8. UGSI competes for jobs in municipal water and wastewater applications with the high-density polyethylene ("HDPE") pipe industry, including the Performance Pipe division of Chevron Phillips.

9. Defendant Eugene Palermo made false and misleading presentations about UGSI products, including Fusible PVC® Pipe, whose presentation I attended at the ASCE Pipelines conference in Miami, Florida in 2012, and believe that similar presentations were also made at the following conferences throughout the United States:

a. Florida AWWA (November 2010)

b. Minnesota Rural Water Association (March 2012)

c. Michigan AWWA (September 2012)

d. Michigan Rural Water Association (March 2013)

e. Florida AWWA (December 2013)

10. The audiences in the above conferences included pipe industry consumers, including contractors and engineers who select pipe for use in municipal water and wastewater applications, and who advise municipalities concerning the same.

11. Consumers in the pipe industry, including contractors and engineers who select pipe for use in water and wastewater applications have been materially influenced by Palermo's statements about Fusible PVC® Pipe.

12. UGSI employees have had to travel around the country to rebut Palermo's false and misleading statements about Fusible PVC® Pipe, including those made in the Palermo Slide Show.

13. UGSI will continue to suffer harm to its reputation and in the form of having to spend time and money rebutting Palermo's false and misleading material if an injunction is not entered preventing Palermo from making false and misleading statements about Fusible PVC® Pipe in the future.

Pursuant to 28 U.S.C. §1764, I declare under penalty of perjury that the foregoing is true and correct.

Executed on April 1, 2016 (date).

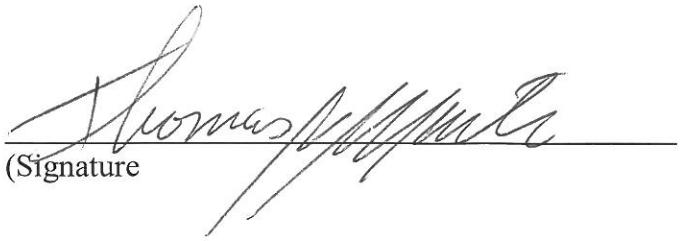

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Exhibit B

VIDEOTAPED DEPOSITION OF EUGENE PALERMO
October 23, 2015
IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF ILLINOIS

UNDERGROUND SOLUTIONS, INC., a Delaware corporation,

Plaintiff,

vs.

EUGENE PALERMO, a/k/a GENE PALERMO,

Defendant.

) NO. 13-cv-8407

APPEARANCES:

FOR THE PLAINTIFF:
CHRISTOPHER SHEEAN, ESQ.
Attorney at Law
Swanson, Martin & Bell, LLP
330 North Wabash Avenue, Suite 3300
Chicago, Illinois 60611
STEPHEN STANCZAK, ESQ.
Attorney at Law
Underground Solutions, Inc.
78-075 Main Street, Suite 202
La Quinta, California 92253

FOR THE DEFENDANT:

JOHN D. FITZPATRICK, ESQ.
Attorney at Law
Mandell Menkes, LLC
One North Franklin Street, Suite 3600
Chicago, Illinois 60606

ALSO PRESENT: Tom Marti, Underground Solutions
Matt Poplin, Videographer

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EXHIBITS

STIPULATION

The videotaped deposition of EUGENE PALERMO, called as a witness at the instance of the Plaintiff, taken pursuant to all rules applicable to the Federal Rules of Civil Procedure by agreement on the 23rd day of October, 2015, at the Hilton Knoxville Airport, 2001 Alcoa Highway, Alcoa, Tennessee, before David L. Kelly, Licensed Court Reporter, pursuant to stipulation of counsel.

It being agreed that David L. Kelly, Licensed Court Reporter, may report the videotaped deposition in machine shorthand, afterwards reducing the same to typewriting.

All objections except as to the form of the questions are reserved to on or before the hearing.

It being further agreed that all formalities as to notice, caption, certificate, transmission, et cetera, excluding the reading of the completed videotaped deposition by the witness and the signature of the witness, are expressly waived.

EUGENE PALERMO,
having first been duly sworn, was examined and deposed as follows:
EXAMINATION BY MR. SHEEAN:
Q. Would you please state your full name for the record.
A. Yes. My name is Eugene Frank Palermo.
Q. Mr. Palermo, my name is Christopher Sheean. I represent the Plaintiff in this matter, Underground Solutions, Incorporated, in a lawsuit that was brought against you in the Northern District of Illinois.
Have you -- I know you've had your deposition taken before, but just so we're clear, we'll go over a couple of the ground rules so we have a clear record.
For each question that I ask, you're going to need to answer out loud and verbally. Although we're videotaping the deposition, nods of the head and shakes of the head aren't really able to be recorded by our court reporter. Okay?
A. Yes.
Q. If you have any questions about a question that I ask, let me know, and I'll try and clarify or I'll rephrase it. But if you answer a

question, I'll assume that you understood it, fair enough?
A. Yes.
Q. And if you need to take a break, so long as there's no question pending, we can take a break at any time. Okay?
A. Yes.
Q. Mr. Palermo, are you married?
A. Yes.
Q. And how long have you been married?
A. Since 2002.
Q. And where do you reside?
A. Friendsville, Tennessee.
Q. And what's your address?
A. 654 Watershaw Drive in Friendsville.
Q. Where were you born?
A. I was born in Morgantown, West Virginia.
Q. What year?
A. 1947.
Q. And did you attend high school?
A. I did.
Q. Where did you attend high school?
A. St. Thomas Military Academy.
Q. Where is that located?
A. Saint Paul, Minnesota.

Q. What year did you graduate?
A. 1965.
Q. Did you, following your graduation from high school, attend any college or university?
A. I did.
Q. Immediately following your graduation from high school?
A. Yes.
Q. What college or university did you attend first?
A. The first one was The College of St. Thomas in Saint Paul, Minnesota.
Q. How long did you attend The College of St. Thomas?
A. Four years.
Q. Did you obtain any sort of degree from The College of St. Thomas?
A. I have a bachelor of science.
Q. In what?
A. In chemistry.
Q. So that would have been 1969?
A. Correct.
Q. Did you continue on with your education at that point or did you enter the workforce?
A. I continued my education.

Q. What was your next college or university you attended?
A. Michigan State University.
Q. And how long did you attend Michigan State University?
A. Four years.
Q. And did you obtain any degree as a result of your attendance at Michigan State University?
A. Yes.
Q. What was that?
A. I have a doctorate in analytical chemistry. By the way, we're still relishing the last 10-second victory.
Q. Now I know how you came to see -- to find Mr. Fitzpatrick as your counsel today. I'm sorry, your degree was a masters? Is that what --
A. A Ph.D.
Q. A Ph.D. in chemistry. Okay. What was your dissertation on?
A. Atomic emissions spectroscopy and atomic florescent spectroscopy for water analysis.
Q. Did you continue on with your education after completing your Ph.D. at Michigan State University?
A. No.

Q. As part of your Ph.D., did you have to develop a thesis?
A. Yes.
Q. Did you have to present your dissertation?
A. Yes.
Q. Was your dissertation published?
A. Yes.
Q. Was it published in any peer-reviewed journals?
A. No.
Q. Okay. Was it subjected to any sort of scholastic rigger in terms of the analysis done by your professors and by your committee to approve your Ph.D.?
MR. FITZPATRICK: Objection to form.
THE DEPONENT: It was reviewed by my professor and a couple of the other professors at the university.
BY MR. SHEEAN:
Q. And did you have to develop factual underpinnings for the thesis that you presented at your dissertation?
A. I'm sorry, could you repeat that?
Q. Did you have to develop factual

underpinning, support, for your thesis that you ultimately presented at your dissertation?
A. I basically did research, collected the data. I gave a couple of presentations, and then the thesis was a summary of all the research that I had done, the data that I had developed.
Q. And the research methodology -- methodologies that you followed in order to complete that research, were those standard, well-developed, approved methodologies recognized in the field of chemistry?
A. It depends. In some cases, yes. In some cases it was new technology.
Q. In the cases of the existing technology, you had -- you had to make sure that you satisfied the prerequisites to make sure that your scientific experiments, your research, was valid, right?
A. Yes, to the extent that it could be proven because a lot of it was new.
Q. Right. I was talking about the established --
A. Right.
Q. That was part of my question. All right. After completing your Ph.D. from Michigan State, what was your first job?

A. I was immediately employed by the DuPont Company.
Q. And where was that located?
A. Wilmington, Delaware.
Q. What was your title?
A. I was a research scientist in the analytical physical measurements group of the plastics department of DuPont.
Q. And how long did you have that title?
A. I spent a year and a half in the thermal analysis group, a year and a half in the infrared group. So it would be three years total.
Q. What were your responsibilities?
A. In the thermal analysis lab, I was responsible for conducting analyses of various samples that were submitted either within the plastics department or other departments within the DuPont Company.
In the infrared lab, I did similar analyses. At that time the analytical group was compromised of approximately 35 to 40 Ph.D. chemists and around 20 or 30 with masters and millions of dollars in analytical equipment.
The head of the analytical physical measurements group, a gentleman named Johnny Mitchell,

decided that because analytical testing within the DuPont Company was somewhat cyclable based on how well sales were going, et cetera, he wanted to make sure that he could keep his group together. And so he started what he called outside business services.
Basically this was an opportunity for the analytical group within DuPont to do high-level analytical testing for other companies outside of DuPont. Because of my background, personality, he asked me to head up that group, and I was the primary contact with outside clients.
Samples would be sent to me for analysis. I would then distribute them to the appropriate group to do the analytical testing. I then would collect the data, write the report, and then present the report to the client.
Q. What was your next position after that first position at DuPont?
A. I was next transferred to the -- it's called the outside -- let's see, it was within their research and development division. It was a marketing group within the research and development division located downtown Wilmington, and that marketing group was -- was an interface between the research and development chemists at the experimental station and

the operating divisions within the plastics department primarily.

It was a two-way streak. If there were particular plastics that were needed with certain properties, they would come to us, and we would go to the research people and say, "We need this type of a plastic with these properties."

Or the other direction: The research scientists would come to us and say, "This is a new plastic we've just developed as these properties. Go out and see if you can find a market for it." So I was in that particular marketing group for about a year and a half.

Q. Okay. What was the next title that you had at DuPont after you left the marketing group?

A. After I left the marketing group, I was then transferred -- and DuPont is a large company. They have a history of transferring people. They want their technical people --

Q. I just want the title.

A. Technical specialist, I believe.

Q. What year are we up to now when you're a technical specialist at DuPont?

A. 19 -- approximately 19 -- fall of 1976.

Q. How long did you stay at DuPont?

A. I stayed with DuPont until 1991 when the group I was with, the Aldo pipe group, was sold to a joint venture between Nesty and Uponor.

Q. Did you go with either one of the -- with that group?

A. Yes. I stayed with the Aldo group and went with the new business in 1991.

Q. What was the new company called that you were working for?

A. Uponor Aldyl Company.

THE COURT REPORTER: Can you say that one more time?

THE DEPONENT: Uponor, U-p-o-n-o-r, Aldyl, A-l-d-y-l, Company.

BY MR. SHEEAN:

Q. How long did you work for Uponor?

A. I was with them until March of 1995, at which point I was hired by another chemical company called Elf, and that's E-l-f, Atochem, A-t-o-c-h-e-m. They hired me specifically to develop a market for their Nylon 11 product in gas distribution.

Q. How long were you with Elf Atochem?

A. I was with them approximately a year and a half.

Q. Okay. So until sometime in '96?

A. September of '96.

Q. And then where did you go after you left Elf Atochem?

A. At that point I was selected to be the technical director of the Plastics Pipe Institute.

Q. Why did you -- did you voluntarily leave Elf Atochem?

A. That's a good question. I had no plans of leaving Elf Atochem. I assumed I would have a long career there. The nominating committee coerced me into applying for the position of technical director.

I had the interview. The following day the vice president of SPI, Society of Plastics Industry, called me to offer me the position. I initially declined because I really wanted to stay with Elf Atochem.

He convinced me it was best for the industry if I became the technical director, at which point I agreed, and I resigned from Elf Atochem and assumed the position of technical director.

Q. What is Plastic Pipe Institute?

A. The Plastics Pipe Institute is a trade association comprising of resin manufacturers, pipe manufacturers, fittings, tools, the pertinences, all related to the plastic piping industry.

Q. Is it -- strike that. Does the Plastic Pipe Institute represent all manufacturers of plastic pipe or only a select group?

A. The Plastics Pipe Institute represents all plastics used for piping applications with the exception of PVC. PVC has their own trade association known as UniBell. That's U-n-i-B-e-l-l, capital "U" and capital "B".

Q. And was that true when you were the technical director of PPI?

A. Yes. At that time we had quite a bit of literature, technical literature, on PVC, and we used to always cooperate with UniBell on updating the PVC literature.

And it then came to an agreement between UniBell and PPI that UniBell would assume the continuation of that literature. The --

Q. And that was before you started as technical director?

A. That was during the time.

Q. Okay.

A. During the time, right. The only -- I'm sorry, the -- with regard to PVC, of course, PVC is included in a lot of the literature that I worked on and developed through the Hydrostatic Stress Board.

Q. I know you have a lot to tell me, and I appreciate that. But I'm limited to seven hours for this deposition, and I'm going to use every seven of those hours. I promise you. And I'm going to do everything I can to finish within the seven hours, but I need you to answer the questions that I ask and not try to add on --
A. Certainly.
Q. -- extra commentary, if it's not necessary. How long were you the technical director of PPI?
A. Approximately eight years.
Q. So until about 2004?
A. I believe, yes. December 2003 is when I left.
Q. Why did you leave PPI?
A. I left PPI because I decided that I wanted to become a consultant for the plastic piping industry.
Q. Was that a voluntary separation from PPI?
A. Yes. It was my decision.
Q. And starting in -- at that time in December of 2003 or shortly thereafter, is that when you -- you began operating Palermo Plastics Pipe

Consulting?
A. Yes. It started January 1, 2004.
Q. And other than the job descriptions that you've just provided to me, any other background in the plastics pipe industry?
A. No. That's pretty much it.
Q. Have you ever designed a plastic piping system for a water distribution?
A. I have worked with water companies and assisted them in -- in how to determine the pressure rating and what -- what type of pressure rating method was used and what the pressure rating would be.
Q. Which water companies have you assisted in setting their pressure ratings for their water piping system?
A. There's been a few. I can't remember how many of them. East Bay one -- East Bay Mun is one that I recall. I don't recall the names of the others.
Q. Other than helping them to determine the pressure rating for their water piping system, have you ever designed a plastic piping system for water distribution?
A. No.
Q. Have you ever constructed a plastic piping system for water distribution?

A. No.
Q. Have you ever operated a plastic piping system for water distribution?
A. No. That's what the water company does.
Q. What makes you qualified to offer opinions on designing plastic piping systems for water applications?
MR. FITZPATRICK: Objection to form. What opinions are you referring to?
MR. SHEEAN: The opinions that he's proffered on his website.
MR. FITZPATRICK: So not opinion testimony in this case, opinions that are at issue that you-all are alleging are false?
MR. SHEEAN: He's rendered myriad opinions in -- in -- on his website, and that's what I'm asking about.
MR. FITZPATRICK: Defending his qualifications with respect to those opinions?
MR. SHEEAN: For now, yeah.
MR. FITZPATRICK: Sure.
THE DEPONENT: Okay. You want to repeat that question for me?
BY MR. SHEEAN:
Q. What makes you qualified to offer

opinions on your website and in your consulting business on designing plastic piping systems for water distribution?
A. In the design of water systems, if you're referring to the pressure rating, it would be my background with the Hydrostatic Stress Board.
If in the design you're referring to rapid crack propagation in plastic pipe, it would be my background and experience with plastic piping materials and the testing of them.
Q. When you say the testing of plastic piping materials, what are you referring to?
A. Referring specifically to the rapid crack propagation, I'm referring to the -- the two test methods that were developed within the ISO standards specifically for testing plastic piping materials for resistance to RCP.
Q. So you have familiarity with those two test methods?
A. I was on the ISO working group that developed them.
Q. For both ISO13477 and 13478?
A. Yes.
Q. Have you ever conducted any testing of plastic pipe pursuant to ISO13477?

A. It depends on your -- what you mean by your question. If you mean in the laboratory if I ran the experiment?
Q. Yes.
A. No, I have not personally prepared the samples or ran the experiment in a laboratory.
Q. What has your involvement been in conducting testing pursuant to ISO13477?
A. I have read articles on testing that has been done using the ISO test method, and I have been involved with the testing of plastic pipe using that ISO test method.
Q. I'm sorry, you read articles, and then what was the second half of that?
A. I have been directly involved with clients who wanted to have the -- the ISO testing done and work with the laboratory and arrange for the testing to be done.
Q. And which clients are you referring to?
A. Let's see, one of them was Washington Gas Light. They experienced an RCP failure in their 12-inch high-density polyethylene pipe.
So I worked with the laboratory to do S4 testing on comparable 12-inch pipe, and I also worked with another client, P&F Distributors, and arranged for

the ISO testing to be done on 12-inch fusible PVC pipe.
Q. Which laboratory did you work with on the Washington Gas & Light testing?
A. GTI, which is the Gas Technology Institute.
Q. Where are they located?
A. In Des Plaines, Illinois.
Q. And what about for P&F, which was the laboratory that you worked with?
A. That one was Jana, J-a-n-a, Laboratories.
Q. Where are they located?
A. They're located in Aurora, Ontario. That's A-u-r-o-r-a.
Q. And what was your involvement in specifically dealing with P&F and Jana Labs in terms of arranging for the S4 testing?
A. We had pipe samples that were obtained. Some of the pipe samples were joined by butt fusion. Some of the pipe samples were joined with the bell and spigot.
Samples were test -- were shipped to Jana Labs, and then the request was for the laboratory to determine the critical pressure. And once knowing the critical pressure, to then test the specimen with the

fusion joint and bell-and-spigot joint.
Q. You didn't have any involvement in actually setting up the S4 testing equipment such as the baffles and things of that nature, did you?
A. No. That's what the laboratory does.
Q. Okay. How many plastic pipe events have you investigated?
A. I'm sorry, could you be more specific?
Q. How many plastic pipe failures have you investigated as a consultant?
A. Hundreds.
Q. And how many of those involved PVC piping?
A. Perhaps 30 or 40, roughly.
Q. To the best of your recollection, approximately how many of those failures overall -- I'm not just limiting it to PVC, but how many of those failures occurred during construction?
MR. FITZPATRICK: Objection to form.
THE DEPONENT: During construction, a small percentage.
BY MR. SHEEAN:
Q. Can you give me a rough estimate of what percentage?
A. Maybe 10 percent, approximately.

Q. And how many of those failures occurred in service? What percentage?
A. Well, that would be primarily the other.
Q. So 90 percent? Okay. I didn't -- I didn't know if there was an "other" category. So if you've investigated hundreds of failures and approximately 30 to 40 of those failures were PVC, what number would you say of HDPE pipe have you investigated?
A. Oh, perhaps, ballpark, 50 or 60 percent would be polyethylene.
Q. And of those 50 to 60 percent, how many -- what percentage of those are 4710 HDPE?
A. 4710 would be a very, very low number.
Q. In the course of investigating HDPE pipe failures, have you ever concluded that the failure was a result of a material defect?
A. Most of them were not. There were some that were material defect, but that would be on both percentage.
Q. What percentage of PE pipe that you have investigated involved material defects, approximately?
A. Again, I don't know. It would be 5, 10, 15 percent. It would be a low number.
Q. Did you ever conclude in the course of

investigating HDPE pipe that the failure was caused by construction error?

A. Yes.

Q. What percentage of the failures that you've investigated of PE pipe involved construction error? And by that I mean contractor error.

A. Probably that would be a higher number. Some are in the 50 to 75 percent perhaps.

Q. And what percentage of the PE pipe failures that you've investigated have involved operator error?

A. When you say "operator", that could also be construction because a lot of times the operators do the construction.

Q. That's fair. That's a fair point. I'm talking about once the pipe is in service and the construction team is offsite. So something that occurs once the pipe is up and running.

A. And when you say "operator", are you meaning the end-user, the owner of the pipeline?

Q. Correct.

A. Okay. That would be a low percentage.

Q. When you do these investigations, who are you typically hired by?

A. That depends.

Q. Is there one group that predominates? I mean, is it -- is it the end-users that's hiring you predominately? Is it the contractor that's hiring you? Is it the material manufacturer?

A. Yes, yes, and yes, or lawyers.

Q. For those entities?

A. Yes.

Q. When you are hired to investigate these pipe failures, is part of your charge to determine the cause of the failure?

A. Yes. Many times that is what we are requested to do is to try to determine the cause.

Q. So in those investigations it does matter what caused the failure?

MR. FITZPATRICK: Objection to form.

THE DEPONENT: It depends on the particular situation. I'd say most of the time, yes.

BY MR. SHEEAN:

Q. Now, in your role as a consultant, you have acted as an expert witness several times, correct?

A. Yes.

Q. In some instances you've been retained solely to act as a consultant to provide counseling to

the lawyers and to the client regarding some pipe incident?

A. Yes.

Q. And how many such cases?

A. In -- most of the time that I'm retained by legal counsel I am retained, and I don't know the exact terminology, as an expert witness, which would be divulged to the other party.

Sometimes I'm retained -- I'm not sure of the terminology. Is it called a fact witness, when someone who only provides information to the lawyer, but I'm not disclosed to the other side. And then many times it starts that way, and then I'm disclosed as an expert.

Q. Approximately how many times have you been retained by a lawyer, but not disclosed as an expert?

A. That would be a low percentage.

Q. Can you give me a number?

A. I could guess.

Q. Give me your best guess.

MR. FITZPATRICK: I'd rather you not guess. You're here to testify as a fact witness.

BY MR. SHEEAN:

Q. Is it more than 10?

A. Maybe.

Q. Okay. Is it more than 20?

A. Likely not.

Q. Okay. And in some cases you've been asked to -- you've been identified as an expert, correct?

A. In most cases I'm identified as an expert.

Q. Approximately how many cases have you been identified as an expert on behalf of a party?

A. Well, it would be 100 minus the 10 or 20. So maybe 80 to 90 percent.

Q. Do you keep a tally that you provide to the counsel as part of your obligation to disclose where -- when and where you've been identified as an expert?

A. No.

Q. Do you have a list of cases in which you've been deposed and/or testified?

A. Yes.

Q. Approximately how many cases have you been deposed and/or testified?

A. Approximately 15 or a little more, in that ballpark.

Q. And in those approximately 15 cases where

you've been disclosed as an expert, how many of those involved HDPE pipe?

A. I'm sorry, could I -- we back up? I thought your question was how many times had I been deposed.

Q. You're right. I'm sorry. I'm sorry, you're right. In those 15 cases where you have been deposed and/or testified, how many times were you identified as an expert on behalf -- strike that.

Let me go back to my first question. In the approximately 80 or so, I think, or 90 cases that you said you've been identified as an expert, right?

A. Wrong. It was 80 to 90 percent.

Q. Eighty to 90 percent. I thought -- okay. So in those cases, how many -- what percentage of those cases involved HDPE pipe?

A. Very, very roughly maybe half, but it could be less. It could be more because I've -- I work with a variety of different materials.

Q. What percentage of those cases involved PVC pipe?

A. Maybe in the 10 to 20 percent, roughly.

Q. Do you know, as you sit here today, any areas where you had been qualified to testify as an expert by a court?

MR. FITZPATRICK: Objection to form. Calls for a legal conclusion.

THE DEPONENT: I'm sorry, I don't quite understand the question.

BY MR. SHEEAN:

Q. If you know, I'd like to know whether or not you are aware of any specific areas where the court indicated you were qualified to testify as an expert.

MR. FITZPATRICK: The same objection.

THE DEPONENT: I'm not sure what you mean by a court stating that I'm qualified to testify.

BY MR. SHEEAN:

Q. Have you ever been the subject of a Motion to Disqualify you as an expert?

A. Yes. That is a strategy that's used in some cases that I was involved in.

Q. Have any of those Motions to Disqualify you ever been successful?

A. No.

Q. Have any of those motions ever resulted in you having to limit what you're entitled to testify to?

A. None that I recall.

Q. Have you ever received payment from

Performance Pipe for your consulting services?

A. I have worked for Performance Pipe. They are a division of Chevron Phillips. So my actual payment was -- for invoices was Chevron Phillips.

Q. If I say "Performance Pipe", you'll know what I mean, right?

A. Performance Pipe as the entity under the corporation of Chevron Phillips, yes.

Q. Thank you. What sort of services did you provide for Performance Pipe?

A. Several.

Q. Can you identify them, please?

A. I have been an expert witness on behalf of Performance Pipe in -- in some of their legal cases. I have been hired by Performance Pipe to give presentations to some of their clients for various topics, and I have been hired by Performance Pipe to give presentations specifically about fusible PVC.

Q. Not all of those presentations that you were paid to give were solely to Performance Pipe customers, were they?

A. Some were to Performance Pipe customers where there was an issue -- a question about the pipe or a question about the pressure rating. So I would be hired by Performance Pipe to go to their customer to

explain which pressure rating should be used or in another case to talk about -- one particular case was -- there was a question about the resin that was used.

Q. I'm not sure you heard my question. My question was: Not all of the presentations that you were paid to give by Performance Pipe were limited to customers of Performance Pipe, were they?

A. That's correct.

Q. What's -- what is the business of Performance Pipe, if you know?

A. They manufacture polyethylene pipe and fittings.

Q. Does Performance Pipe compete with Underground Solutions for customers in the water distribution industry?

MR. FITZPATRICK: Objection. Foundation.

BY MR. SHEEAN:

Q. You can answer, if you know.

A. Yes.

Q. Who would determine when and where you would give a presentation where you were paid by Performance Pipe?

MR. FITZPATRICK: Objection to foundation.

THE DEPONENT: Primarily that would be Wes Long.
BY MR. SHEEAN:
Q. Was anyone else involved in that decision-making process at Performance Pipe?
MR. FITZPATRICK: Same.
THE DEPONENT: Yes. Karen Lively for the -- I'm sorry.
BY MR. SHEEAN:
Q. Anyone else?
A. For the presentations that were -- was your question specifically for fusible PVC or for all presentations that I did?
Q. For fusible PVC.
A. For the fusible PVC, it was Wes and Karen.
Q. Would you send drafts of your PowerPoint presentations and/or papers to anyone at Performance Pipe for comments before you would submit them?
A. It depends. In some cases, yes, and other cases, no.
Q. Well, in some instances you did work directly with individuals at Performance Pipe on interactions of your presentations?
MR. FITZPATRICK: Objection. Form.

THE DEPONENT: Not so much the presentation. More if Performance Pipe hired me to write a paper using their data, then I would review the draft with them.
BY MR. SHEEAN:
Q. During the time that you were consulting for Performance Pipe, you also performed consulting services for other parties, correct?
A. Yes.
Q. It wasn't an exclusive relationship at that time?
A. Correct.
Q. When you took on a new project for a third party, would you have to run it by Performance Pipe to make sure there was no conflict of interest?
A. Never.
Q. Okay. When is the last time you performed any services for Performance Pipe?
A. I would say approximately two years ago.
Q. And what was the project that you were involved in two years ago?
A. One of the presentations that I would have given.
Q. Do you recall who the audience was for that presentation?

A. No. It was during -- the time was two or three years ago that -- there was a shift between being hired by Performance Pipe and being hired by the PE Alliance, and I just don't remember when that shift occurred.
Q. Do you know why there was a shift from you being hired by Performance Pipe to you being hired by PE Alliance?
A. Yes.
Q. Why was that?
A. Performance Pipe discussed the work that I was doing, and they felt that rather than Performance Pipe paying for everything that I did, that the cost should be borne by the PE Alliance.
Q. So Performance Pipe was looking to distribute the costs more evenly amongst the different PE manufacturers?
A. Yes.
Q. Now, I know you were the technical director for Plastics Pipe Institute, correct? You told us about that when you left in '96?
A. Yes.
Q. After you left Plastic -- Plastics Pipe Institute, did you later become a paid consultant for them?

A. No, not that I recall specifically.
Q. So you've never been retained by PPI and paid to give a presentation?
A. There's two questions there.
Q. Okay. I'll ask a new question. Since you left the employee of PPI as its technical director, have you ever been retained by PPI for any reason?
A. I believe that I may have. I'm trying to recall now. Possibly to either write a document or to review a document. I seem to recall doing something for PPI along those lines.
Q. And were you paid for that time?
A. Yes.
Q. But you can't recall, as you sit here today, what that document was?
A. No, I don't.
Q. Do you recall approximately how long ago that was?
A. It wasn't recent. So I would guess five to 10 years ago.
Q. And you mentioned a few moments ago the shift from Performance Pipe to PE Alliance. Is that also known as The Alliance For Polyethylene Pipe?
A. I have not heard that term.
Q. APEP? For the P -- so we'll call it the

PE Alliance, since that's what you're familiar with. Okay?
A. Yes.
Q. For the PE Alliance, you have been retained and -- by them to provide consulting services, correct?
A. Yes.
Q. And you've been paid?
A. Yes.
Q. What type of services have you provided to the PE Alliance?
A. Either giving a presentation at an industry meeting or giving a presentation at a customer location.
Q. Anything else that you can recall?
A. No.
Q. Paper submissions in conjunction with those presentations?
A. Well, that's part of it.
Q. Who decided what presentations you would give?
A. Primarily Peter Dyke.
Q. Did you ever make any suggestions or recommendations for speaking opportunities to Mr. Dyke or anyone at the PE Alliance?

A. I believe I did.
Q. And who at the PE Alliance would decide what papers you would submit?
MR. FITZPATRICK: Objection to form.
THE DEPONENT: Initially it was Peter Dyke. And then he was replaced by someone else, but I can't remember that person's name.
BY MR. SHEEAN:
Q. Is it Steve Shur?
A. It might be, yeah. That rings a bell.
Q. Are you still performing services for the PE Alliance?
A. No.
Q. What topics did you give presentations on for the PE Alliance?
A. It was primarily on rapid crack propagation in PVC pipe.
Q. Any other topics that you can recall?
A. Possibly on butt fusion PVC pipe. I don't remember if it included that or not.
Q. Did you give any presentations on any other types of pipe besides PVC for the PE Alliance?
A. No.
Q. When is the last time you performed any services for the PE Alliance, to the best of your

knowledge?
MR. FITZPATRICK: Objection. Asked and answered. Go ahead.
DEPONENT: I believe the beginning of this year I wrote a paper that was to be presented at the 2015 ASCE meeting.
BY MR. SHEEAN:
Q. Were you paid for that work?
A. Yes, I was.
Q. Was that paper accepted for ASCE?
A. Yes, it was.
Q. Was it published?
A. I don't know if it was published. It was not presented.
Q. Do you know why it wasn't presented?
A. Yes.
Q. Why was that?
A. The PE Alliance asked me not to present it because they were -- they had received a number of interrogatories from various legal cases, and they did not want to continue paying legal fees to answer interrogatories.
Q. So you withdrew your submission?
A. Yes, I did.
Q. Do you recall the topic of that paper

that you submitted at the beginning of 2015 for ASCE?
A. It was on rapid crack propagation, how to design against rapid crack propagation in PVC pipe.
MR. SHEEAN: Why don't we take a five-minute break.
THE VIDEOGRAPHER: It's 8:59. We're going off the record.
(The deposition was in recess.)
THE VIDEOGRAPHER: The time is 9:24. We're now back on the record.
BY MR. SHEEAN:
Q. A couple of follow-up questions to some we've been covering previously, Mr. Palermo. We were talking about the Jana Labs research project that you were involved in with P&F. Do you recall that?
A. Yes.
Q. Who selected Jana Labs?
A. My recollection is they reviewed the testing with Bruce Papenhause and laboratories that could be used, and Mr. Papenhause made the final decision.
Q. Did you have any other suggestions besides Jana for him?
MR. FITZPATRICK: Objection. Form. Assumes facts.

THE DEPONENT: There were only two laboratories that I was aware of in the US that could actually do the ISO S4 test on 12-inch pipe.
BY MR. SHEEAN:
Q. That was Jana and GTI?
A. Correct.
Q. Did you also contact GTI and get information about conducting the test there?
A. I think Mr. Papenhause made the decision which lab to use, and then they contacted the lab.
Q. You indicated that there was testing done on both butt fused PVC pipe as well as bell-and-spigot pipe for ISO 13477 testing; is that right?
A. Yes.
Q. Were those both fusible PVC pipe specimens?
A. The butt-fused pipe was fusible PVC. Of course, the bell-and-spigot pipe was not.
Q. Why did you decide to test nonfusible PVC pipe as part of your analysis or did you make that decision?
A. No, that was Mr. Papenhause's decision. What he wanted to do was once we knew what the critical pressure was, he wanted to conduct some tests above the

critical pressure to confirm that the running crack went through a butt fusion and to confirm that the running crack arrested at a bell-and-spigot joint.
Q. To your knowledge, did anyone analyze whether there were any material differences in the pipe between the nonfusible PVC pipe and the fusible PVC pipe?
MR. FITZPATRICK: Objection. Form, material, ambiguous.
THE DEPONENT: I don't recall any physical property tests that were done.
BY MR. SHEEAN:
Q. Who set the testing parameters for those Jana Labs tests that were conducted?
A. What do you mean by test parameters?
Q. Who selected the diameter of the pipe?
A. That was Bruce Papenhause.
Q. Who selected the length of pipe to be used?
A. That was based on the requirements of the ISO test method.
Q. Who ensured that the test was ISO compliant?
A. That was Jana Laboratories.
Q. So they would have selected the medium to

be used for the various test points on the S4 testing scale?
A. They did.
Q. And, to your knowledge, what was the medium that used by Jana when it conducted the S4 testing on UGS sized fusible PVC pipe?
A. It was done in air.
Q. Is fusible PVC pipe, to your knowledge, sold for gas distribution?
A. There is no PVC pipe that's sold for gas distribution in North America. PVC is used in other countries. I don't know if fusible PVC is used for gas outside the US.
Q. So in the United States it's not used for gas distribution; is that correct?
A. In the United States it's not permitted for use for gas distribution.
Q. And yet Jana Labs tested it using air as the medium, correct?
A. Yes.
Q. Doesn't ISO 13477 require that the test be conducted using the medium that the pipe is designed to convey?
A. I don't know if it says requirement of the test method.

Q. It does specifically reference that in the test -- in the ISO regulation, doesn't it?
A. I don't recall.
Q. Do you know how the critical pressure was determined in that lab -- Jana Labs testing?
A. The critical pressure was obtained by conducting tests at a particular temperature. I believe close to zero degrees C, and conducting the test on various specimens with various internal pressures and determining whether the crack arrested or the crack propagated.
Q. Does ISO 13477 require that the testing be done at or near zero degrees Celsius?
A. I believe the test method itself can be done at any particular temperature. The conventional temperature that's used is zero degrees C, but that's not a requirement of the test method.
Q. In fact, ISO 13477 specifically indicates it can be anywhere between zero and 25 degrees Celsius, doesn't it?
A. I don't recall if that's what the test method says, but I know that it can be done at various temperatures.
Q. We were talking before about some of the investigations that you've been hired to conduct

regarding pipe failures. Do you recall that?
A. Yes.
Q. To your knowledge, did you ever conclude that the pipe -- the party that had retained you, the underlying client, was at fault or the cause of the pipe failure?
MR. FITZPATRICK: Objection. Form.
THE DEPONENT: I -- I mean, there's been so many I've been involved in I don't recall.
BY MR. SHEEAN:
Q. That's probably something you'd remember, isn't it, if you had to go back to your client and say, "Hey, I've get really bad news. I've done my investigation, and all signs point to you as the cause of this failure?" I mean, that's a -- that's a conversation you'd probably remember, isn't it?
MR. FITZPATRICK: Objection. Form. Is there a question there?
MR. SHEEAN: Yeah.
MR. FITZPATRICK: Isn't it something you would remember?
MR. SHEEAN: Uh-huh.
MR. FITZPATRICK: He just testified he doesn't remember it.
BY MR. SHEEAN:

Q. You can answer.
A. Yeah, I'd have to go through the different cases I was involved in.
Q. Okay.
A. I don't remember right now.
Q. In regards to the PVC pipe investigations that you've been involved in, what percentage of those cases did you conclude were caused by contractor error?
A. There were two I can recall right offhand. One was an installation issue where the pipe was subjected to or installed on rocks, and there was another one that I recall where there was an over-bending issue.
Q. Do you recall the location where the installation error occurred where it was installed on rocks? Which job was that?
A. It was some place in Mexico.
Q. Do you recall who the pipe manufacturer was in that case?
A. Yes.
Q. Who was that?
A. JM Eagle.
Q. Was that fusible PVC pipe?
A. No.
Q. And how about the over-bending case, do

you recall which job that was?
A. No. I don't recall right now.
Q. Was that the Pittsburgh case?
A. Pittsburgh case? Oh, it was not fusible PVC.
Q. Oh, okay.
A. It was also JM Eagle.
Q. So in the two investigations where you concluded contractor error that you can recall, those both involved bell-and-spigot PVC pipe; is that right?
A. For those two, yeah. Those are two of the ones that -- yeah.
Q. And, to the best of your recollection, as you sit here today, you can't recall any investigation that you conducted where you concluded that the cause of the failure of a fusible PVC pipe incident was contractor error; is that right?
A. Would you be more specific in your question about what you mean by investigation that I conducted?
Q. Sure. Maybe that's not the right word. In every instance where you were retained as a consultant to analyze a pipe failure involving fusible PVC pipe, have you ever concluded that the cause of the failure was contractor error?

MR. FITZPATRICK: Objection to form.
THE DEPONENT: I'm trying to recall the different ones, whether they be legal or didn't go to legal. I'm sorry, could you repeat the question again? Sorry.
BY MR. SHEEAN:
Q. No problem. Have you ever concluded in any case where you were retained to analyze the -- a pipe failure involving fusible PVC pipe, that it was caused by contractor error?
MR. FITZPATRICK: Chris, for clarity, when you say "case", are you referring to litigated matters?
MR. SHEEAN: No.
MR. FITZPATRICK: Okay.
MR. SHEEAN: Let me ask it again. Thanks.
BY MR. SHEEAN:
Q. In any matter where you were retained to analyze the cause of a pipe failure involving PVC pipe, have you ever concluded that the cause of the pipe failure was contractor error?
MR. FITZPATRICK: Excluding the two that he testified.
THE DEPONENT: The two that I gave you

were --
BY MR. SHEEAN:
Q. Those were not fusible PVC pipe.
A. Your question was PVC.
Q. I'm sorry, let me try this for a fourth time. Mr. Palermo, in every case -- strike that. Mr. Palermo, in every matter where you were retained to analyze a pipe failure involving fusible PVC pipe, have you ever concluded that it was caused by contractor error?
A. And, again, I guess it depends on what we mean by the term "analyze". I have reviewed the analyses conducted by laboratories in the case of some fusible PVC failures.
I have not actually been asked to conduct, be the principal investigator, in any of the fusible PVC failures that I can recall.
Q. Okay. In those instances where you were retained to review prior reports, did you ever agree with the findings of a third party that the cause of the failure in a fusible PVC pipe incident was contractor error?
A. Yes.
Q. Which ones?
A. Well, for example, the fusible PVC

failure that occurred in Collier County, the second one I'm referring to, which was a rock impingement failure, that would be operator cause because it was installed improperly on a rock.
My recollection is I reviewed some of the failures that occurred in North Dakota, and those were due to bending of the pipe. I think it was questionable whether that was within the allowable bending or not. I'm not sure that has been decided yet.
I was retained, let's see, for Dorchester County. That was a pressure test. There was a question as to whether the depth was exceeded, the recommended depth. It's, I believe, still in question. If it was greater than the recommended depth, you know, we could argue that was operator. I believe the operator doesn't believe that it is.
In the case of Jordan Valley, the cause of the failure -- well, there were two of them. One was a pressure test. That was not operator. The second one was during a pigging operation. I don't know if that would be considered operator error.
They were just simply doing a pigging of the line. I don't know if that was anything contrary to what the pipe manufacturer recommended.

Q. What would you need to look at in order to know whether or not in the case of Jordan Valley the pressure test or the pigging operation were outside the parameters of what's recommended by the manufacturer?
A. For the pressure test case, I'm -- I'm not aware at this time of anything that was done wrong. I don't believe that was operator error.
In the case of the pigging, there's some question as to whether or not the debeading process had anything to do with the actual future. The debeading, if improperly done, can cause notches on the inside of the pipe, and that is possible that is what could have led to the failure.
So whoever the operator was that did the debeading, that would be an operator issue. I -- I don't recall the name of the company that actually did the debeading process.
Q. Any other incidents that you can recall that were contractor error?
A. Not offhand right now. Oh, there was one. I believe there was an instance, I believe, in -- it might have been Pittsburgh where there was a -- roughly a 400-foot section of pipe in the parking lot, and apparently the -- it was not under pressure,

and the operator, I believe it was reported, exceeded the bending limit, and that bending stress caused RCP failure. So that would be considered operator error.
Q. And where was that?
A. I don't recall. It might have been Pittsburgh. It was one of the -- one of the ones.
Q. Any others that you can recall?
A. There were some RCP failures that occurred as a result of a -- of a saw cut. That's what the laboratory investigation stated. I don't recall if it was improper sawing or just the sawing operation itself.
There were some RCP failures that were attributed to a tapping operation. I'm not sure if the tapping was done properly or improperly. It was reported done -- it was -- the cause of it was a tapping operation, but I don't know if it was improper tapping or not.
Q. Do you recall where that was, the tapping operation?
A. There were a couple of them. Some of the early ones, as I recall. I don't remember which city it was.
Q. Anything else?
A. There's a number of them. Those are some

main ones. I remember a tapping or cutting or bending or leak testing. Those are some of the primary causes.

Q. In any of the analyses that you were retained to undertake involving fusible PVC pipe, did you ever either conclude on your own or concur with a third party's investigation where there was a finding of material defect as the cause of an RCP event?

A. My recollection is a couple of the early RCP failures, the -- in their investigation, the laboratory reported that the pipe may not have met the requirements or the AWWA standard.

So I believe the quality or integrity of the pipe was in question. Those are the only ones I'm aware of where a material or a pipe defect was possibly the cause.

Q. Do you recall which -- which jobs those involved where there may have been a material defect?

A. It was some of the early ones.

Q. You don't remember the names?

A. I don't remember the names.

Q. In those instances that you can recall, was it a problem with the resin or with -- if you know?

A. I don't know.

Q. Was it a problem with the extrusion, if you know?

A. I don't know.

Q. We talked a little while ago about cases in which you were retained and you testified, and you have a list of those somewhere, right?

MR. FITZPATRICK: Objection. Asked and answered.

BY MR. SHEEAN:

Q. I'm just confirming.

A. Yes, I do.

Q. Can you recall -- and I know I don't ask you to bring it and you don't have it with you -- to the best of recollection, the names of those cases?

A. There's -- of the 15 cases where I testified?

Q. Yes.

A. Yeah, I wouldn't remember all of them.

Q. Can you remember any of them?

A. Yes.

Q. Which ones?

A. Let's see, I testified -- I was deposed for the P&F versus UGSI. I was deposed in a case involving both polybutylene pipe failure in Arizona. I was deposed in a case involving an HDPE gas pipe failure. I was deposed in the case of a PEX tank failure.

Q. How do you spell that?

A. P-E-X, all capital letters.

Q. And where was that PEX tank --

A. The PEX tank, that was in Norcross, Georgia.

Q. And how about the HDPE?

A. That was in Las Vegas, Nevada.

Q. Okay. Any others?

A. Yes. Let me think. Medium-density or a polyethylene gas pipe failure that occurred in Texas. Another medium-density, squeeze-off failure that occurred in Kentucky. How many is that?

Q. I have six. Any other fusible PVC cases that you testified in?

A. Fusible PVC -- oh, yes, Dorchester County.

Q. Okay.

A. Those are the only two that I can recall for fusible PVC where I was deposed.

Q. Okay. What were your conclusions in the P&F litigation where you were retained as an expert?

A. The litigation was primarily a battle of words back and forth between two companies. Primarily my expert report, as I recall, had to do with my opinions about fusible PVC and rapid crack propagation

failures.

Q. Have you reread your testimony from those two days of deposition for the P&F case at any time recently?

A. No.

Q. As you sit here today, are there any conclusions that you rendered in the P&F case that you now believe are incorrect?

MR. FITZPATRICK: Objection. Form.

THE DEPONENT: I'm not aware of any conclusions that I drew that are incorrect.

BY MR. SHEEAN:

Q. Okay. And then you were deposed in Dorchester County last year; is that right?

A. Yes.

Q. Okay. What were the conclusions that you reached in that case?

A. My recollection is that there was a long-running RCP crack that occurred, and as a result of that RCP failure that occurred during the pressure test, they were not able to -- to complete the requirements of the pressure test because of the failure.

Q. Anything else?

A. That was my conclusion.

Q. Did you reach any conclusions as to the reason why they weren't able to complete their pressure test?
A. Because they had an RCP failure.
Q. Did you reach any conclusions as to the cause of that RCP failure?
A. I don't believe the cause of the failure has been determined, at least not that I'm aware of.
Q. Have you reached any conclusions about the cause?
A. No.
Q. Does that -- strike that. Were you asked to reach any conclusions as to the cause of the RCP failure in the Dorchester County case?
A. I was -- my recollection is I was asked my opinion on it, and because of the fact that the point of initiation or what they thought was the point of initiation was either underground or underwater, it was almost impossible to draw a conclusion as to what was the actual cause.
MR. FITZPATRICK: I'm going to designate as confidential the last two questions concerning the expert analysis -- undisclosed expert analysis rendered in the Dorchester County litigation. Keep that open until -- you're going to continue

with Dorchester?
MR. SHEEAN: No.
MR. FITZPATRICK: Okay. Then just those two questions and answers. It's not to be used outside of this litigation.
MR. SHEEAN: I don't have an objection to your designating it as confidential, but I would point out that he has been disclosed. I mean, he's been deposed already. So --
MR. FITZPATRICK: Understood.
MR. SHEEAN: -- to the extent he's been deposed and those questions have been asked, then you can't tell --
MR. FITZPATRICK: Well, whatever questions he was provided in that litigation, and the answer is certainly out of the bag. But to use this deposition in that litigation is restricted by its use.
BY MR. SHEEAN:
Q. We were talking before about your presentations that were made on behalf of Performance Pipe. Do you recall any of the customers specifically that you met with on behalf of Performance Pipe?
MR. FITZPATRICK: Objection to form.
THE DEPONENT: Presentations that I made

on behalf of Performance Pipe was a Texas water company where there was a question about the resin that was used and its performance and how it should be pressure rated.
BY MR. SHEEAN:
Q. What -- what sort of pipe was that?
A. That was an HDPE.
Q. Can you recall any of the customers that you met with to give presentations regarding butt fused PVC pipe on behalf of Performance Pipe?
A. I have not given any presentations to Performance Pipe customers.
Q. Can you recall any specific customers with whom you met to discuss fusible PVC pipe on behalf of the PE Alliance?
MR. FITZPATRICK: Objection to form.
THE DEPONENT: There was a customer that I had a conversation with at an industry meeting. The name of that water company was Citizens or a combination of water/gas company, and they asked me a number of questions about fused PVC pipe.
I had a discussion with them. Based on that, they asked me if I could come to their location to give them a presentation. I proposed that to the alliance, and they agreed that I would

do that. And, therefore, I put a presentation together and gave the presentation to Citizens.
BY MR. SHEEAN:
Q. And did you bill the alliance for that time?
A. Yes, I did.
Q. And that presentation that you gave to, you said, Citizens, is it Citizens Energy?
A. Yes, Citizens something.
Q. That was in Michigan, if you recall?
A. I don't recall. I don't think it was Michigan. I don't recall.
Q. In any case, that presentation that you give to Citizens involved butt fused PVC pipe and RCP?
A. Yes, it did. That was their question. They wanted information about it.
Q. Okay. You testified previously about the shift from your being a consultant for Performance Pipe to your being a consultant for the PE Alliance, right?
A. Yes.
Q. What is your understanding of how your presentations on butt fused PVC pipe benefit the PE Alliance members as a whole?
MR. FITZPATRICK: Objection to foundation, form. Assumes facts.

THE DEPONENT: I would put the presentation together. My reason for putting the presentation together is I felt it was important for users to know that these failures had occurred and what they could do to prevent these RCP failures from occurring.

I feel it was to the benefit of the industry to do that. The alliance agreed. So they agreed to -- to pay me for that.

BY MR. SHEEAN:

Q. Why did you feel it was a benefit to the industry for you to give that presentation regarding butt fused PVC pipe?

MR. FITZPATRICK: Objection to form.

THE DEPONENT: I'm a consultant for the plastic piping industry. I have clients who manufacture PVC and manufacture polyethylene, manufacture polyamide, manufacture PEX, et cetera.

If there's a problem with PVC pipe, if there's a failure in PVC pipe or if there's a failure in polyethylene, a failure in plastic pipe gives a bad name to plastic pipe. I like to promote plastic pipe, all kinds of plastic pipe.

I believe there's -- there is a propensity for butt fused PVC pipe to have these

RCP failures. I personally am concerned about them. I believe it's a potential danger to the operator and the public.

As a consultant to the industry, I want to do what I can to help to prevent these failures from occurring. I believe there's a way that the operator can design to not have these failures occur, and it's incumbent on me, I believe, as a consultant to the plastic industry to do what I can to prevent these failures from occurring.

BY MR. SHEEAN:

Q. Okay. I want to follow up on that, but first I'm not sure you answered the direct question that I had, which was:

How in your prior answer does it benefit the PE Alliance members for you to give these presentations on butt fused PVC pipe?

MR. FITZPATRICK: Objection. Asked and answered.

THE DEPONENT: I believe that was your previous question. Your next question was a different question. I answered it.

BY MR. SHEEAN:

Q. I don't think you did answer it. I'll ask it again. How do you believe your presentations on

butt fused PVC pipe benefit the PE Alliance members, not the end-users, PE Alliance members?

MR. FITZPATRICK: Objection. Asked and answered.

THE DEPONENT: I believe it helps the overall plastic piping industry. I think whenever there is a failure in -- in plastic, it helps the plastics industry to prevent these failures.

BY MR. SHEEAN:

Q. So your concern about the negative perception of the plastic pipe industry as a whole, is that right?

A. Yes. I'm a consultant for the plastic piping industry, yes.

Q. Can HDPE 4710 have RCP?

A. It depends on which grade of PE 4710 or type of PE 4710. Most of them are bimodal, and testing that has been done shows that the RCP resistance is -- the critical pressure is very high. So it's very unlikely that you would have an RCP failure in most PE 4710 pipes.

Q. What if the inner layer of the 4710 pipe has been degraded due to chlorine oxidative degradation, does that increase the risk of an RCP failure in that pipe?

A. I don't --

MR. FITZPATRICK: Objection to form. Calls for expert testimony.

THE DEPONENT: I don't know of any testing that's been done to confirm or deny that.

BY MR. SHEEAN:

Q. Have you ever told anyone that fused PVC pipe is prone to RCP failure?

A. I don't know if I specified specifically -- what was the question?

Q. Prone.

A. Prone, but did you say PVC or butt fused PVC.

Q. Butt fused PVC pipe is prone to RCP failure.

A. Yes.

Q. What is your definition of "prone" in that instance?

A. That it's more likely for it to occur under certain situations.

Q. How frequently in every 10,000 feet of fusible PVC pipe would you expect an RCP event to occur given your finding or belief that it's prone to RCP?

MR. FITZPATRICK: Objection to form.

THE DEPONENT: I'm not sure you can

answer that question when you say expected to occur. You never expect it to occur. The fact -- the facts are that it has occurred 30 to 40 times.

So, in my opinion, then it's -- it is susceptible under certain situations to RCP failures.

BY MR. SHEEAN:

Q. But you can't quantify it within every 10,000 feet?

A. Well, if you take the number of -- pick a number of 40 failures and divide that by the number of feet -- all I can go by are the facts, which is how many have actually occurred.

Q. Do you agree that PE -- strike that. Do you agree that PE pipe is prone to oxidative degradation when exposed to chlorine?

MR. FITZPATRICK: Objection to form, relevance. Expert testimony.

THE DEPONENT: Studies have shown that, again, it depends on the type of polyethylene and the additive package. Some of the early generation polyethylene materials with certain additive packages when tested show that they are more prone to oxidative degradation.

Some of the more modern polyethylene materials with their additive package when tested show that they are not as likely to have failures from oxidative degradation.

BY MR. SHEEAN:

Q. Would the critical pressure of PE pipe drop if it's subject to oxidative degradation from chlorine?

MR. FITZPATRICK: The same: Form, foundation. Calls for expert testimony.

THE DEPONENT: I'm not aware of any studies RCP testing that have been done on pipe that has been purposely degraded from chlorine. I don't know how to answer that question.

BY MR. SHEEAN:

Q. What about the critical pressure, though, aside from RCP testing?

A. Well, that is RCP testing.

Q. So you have no opinion as to whether or not the critical pressure of PE pipe would drop after it has suffered oxidative degradation from chlorine?

MR. FITZPATRICK: Same: Form, foundation. Calls for expert testimony. Misconstrues.

BY MR. SHEEAN:

Q. You can answer.

A. Yeah, I have not. I have not seen any -- any studies whatsoever that would confirm or deny that.

Q. Are PE pipes with electrofused joints prone to failure?

MR. FITZPATRICK: Same, form.

THE DEPONENT: The likelihood or probability of failure of an electrofusion joint is less than the probability of failure of a standard heat-fusion joint because you've taken more of a human element out.

BY MR. SHEEAN:

Q. So you don't believe that it's prone to a failure?

A. Again, it depends on your definition of "prone", but if your definition of "prone" is is it likely to fail, the whole purpose of an electrofusion joint is so that it would not fail.

Q. Well, I'm using your definition of "prone" based on your belief that fusible PVC pipe is prone to RCP failure. Okay? So when I use the word "prone", that's what I mean. Okay?

A. Okay.

Q. Is PE 3408 prone to

slow-graph -- slow-crack crack growth?

MR. FITZPATRICK: Same, form.

THE DEPONENT: Your question, again, was: Is PE 3408 subject to or prone to slow-crack growth? It depends on which PE 3408. There's many different generations.

Some of the early generation PE 3408 materials had lower slow-crack growth resistance. So the early generation polyethylene materials would be more prone to slow-crack growth than the modern 3408s, when they were called 3408s, which have higher resistance to slow-crack growth.

BY MR. SHEEAN:

Q. Is PE 4710 prone to slow-crack growth?

MR. FITZPATRICK: Same objections.

THE DEPONENT: Most PE 4710 materials are bimodal, and they have very high resistance to slow-crack growth. So I would say, no, they're not prone to slow-crack growth failures.

BY MR. SHEEAN:

Q. Is PE pipe prone to pull out from fittings if it's stretched too far during installation?

A. It depends on what type of fittings you're talking about.

Q. Any fittings.

A. Well, if it's a butt-fusion fitting, no, it would not pull out. If it's a mechanical thing, maybe. It depends on what type of mechanical fitting.
Q. What types of mechanical fittings are prone to suffer pullout with PE pipe if it's stretched too thin during installation?
A. A category 3 --
Q. What's a --
A. -- mechanical fitting.
Q. What's a category 3 mechanical fitting.
A. A category 3 mechanical fitting is a mechanical fitting which has seal resistance, pressure resistance, but no pullout resistance.
Q. In your presentations to various groups on behalf of the PE Alliance, why don't you warn people about oxidative degradation in PE pipe?
MR. FITZPATRICK: Objection to form.
THE DEPONENT: Because that wasn't the subject of the presentation.
BY MR. SHEEAN:
Q. Have you -- have you ever made that the subject of a presentation to any of the AWWA or MRA groups that you've presented to?
A. No, I have not.
Q. What about the problems with pullout from

category 3 mechanical fittings in PE pipe, have you ever made that the subject of a presentation to any of the AWWA or other groups that you've presented to on behalf of the PE Alliance?
MR. FITZPATRICK: Objection to form. Misconstrues.
THE DEPONENT: Most of my experience with polyethylene and use of mechanical fittings, et cetera, is in the gas industry. These fittings aren't used that much in the water industry.
BY MR. SHEEAN:
Q. Have you ever given a presentation to any of the AWWA or MRA groups to whom you've presented on behalf of the PE Alliance involving problems with pullout from fittings in general in PE pipe?
A. No.
Q. Have you ever presented to any AWWA or MRA group on behalf of the PE Alliance regarding slow-crack growth problems in PE pipe?
MR. FITZPATRICK: Objection to form. Misconstrues.
THE DEPONENT: I don't recall.
BY MR. SHEEAN:
Q. I should have done this before. Mr. Palermo, have you -- strike that. In your

presentation we're about to get into you refer often to butt fused PVC pipe, correct?
A. Yes.
Q. Okay. Are you aware of any company in North America, other than Underground Solutions and its licensee, that supplies butt fused PVC pipe in the United States or Canada?
A. My understanding is Underground Solutions is the sole inventor of butt fused PVC pipe, and they license that technology to a number of pipe manufacturers.
Q. Okay. So having said that, are you aware of any other company besides UGSI or its licensees that supplies butt fused PVC pipe in North America?
A. No.
Q. What is your definition of rapid crack propagation or RCP?
A. A crack that propagates rapidly in pipe.
Q. Do you believe there's a minimum length the crack has to run in order for it to qualify as an RCP event?
A. Yes.
Q. What is that length?
A. If the crack is less than 4.7 times the outside diameter, it's a rapid crack arrest. If the

crack is more than 4.7 times the outside diameter, it's a rapid crack propagation.
Q. On what do you base that statement?
A. That's the definition of a crack arrest or a crack propagation in the ISO standard.
Q. Which standard?
A. 13477.
Q. Do you believe that RCP requires a source of internal pressure in order to occur?
A. No.
Q. And what is the basis for that statement?
A. In order for RCP to occur, you have to have a stress which is greater than the resistance of the pipe. Well, let me take that back. You first have to have an initiation, and then once the crack is initiated, the energy or stress has to be greater than the resistance.
Q. We've been talking a lot about ISO 13477, but we also talked a little bit about 13478, right? And that's the full-scale test?
A. Those are the two test methods, yes.
Q. And what is the definition of RCP in 13478?
A. As I recall, 13478 doesn't have a clear definition of a crack arrest or a crack propagation as

13477 does.
Q. Is there a minimum pipe length that's required in order to test under 13478?
A. There's some wording with regard to crack length that has to be greater than something or another. I forget what it is, and when you have that length, whatever that length is, for it to be propagation, it has to be 90 percent of that length.
Q. Don't you need a minimum of 40 feet of pipe in order to conduct a single point of a full-scale test on plastic pipe under ISO 13478?
A. There is some minimum there. It's in meters, but I forget what the number exactly is.
Q. So based on the minimum pipe length required for RCP testing under 13478 and the fact that a crack has to be at least 90 percent of that, that's really a different measurement of RCP then what's available under 13477, isn't it?
MR. FITZPATRICK: Objection to form.
THE DEPONENT: Yeah, the 13477 is a clearer definition of what's considered an arrest propagate and a propagation. 13478, it's a little bit different.
BY MR. SHEEAN:
Q. But if you follow 13478, you come out

with a different and a longer measurement for what's required for a minimum crack length; isn't that true?
A. There is a minimum -- a minimum length of the sample, but I don't recall if it's -- well, first of all, it's in meters not feet. I don't recall what the -- the minimum is.
There -- it's complicated because they also in 13478 talk about a certain length of pipe that you can have, which is less resistant to RCP in an effort to get the crack to run through the less resistant material first and then go into the pipe that's being tested.
So it's -- and there's different lengths that are involved there. So the actual length of the pipe that's being tested could actually be less than, I think, what you were saying.
Q. When is the last time you read 13478?
A. It's been a while.
(Exhibit 1 - UGSI00677-UGSI00739)
BY MR. SHEEAN:
Q. All right. I'm going to hand you what we've marked as Deposition Exhibit Number 1, which is a document bates labeled UGSI00677 through UGSI00739.
It's entitled "Plastic Pipe For Water Distribution - What You Need to Know About RCP and Butt

Fusion Integrity MRWA-3/20/13". Do you see that?
A. Yes.
Q. Have I accurately described Exhibit 1?
A. Yes.
Q. And in the bottom left corner it says, "Dr. Gene Palermo, Palermo Plastics Pipe Consulting." Is that right?
A. Correct.
Q. Okay. Did you prepare this PowerPoint presentation?
MR. SHEEAN: And I'll submit for the record this is the same PowerPoint presentation that was attached to our complaint and our amended complaint.
THE DEPONENT: This looks like the PowerPoint that I prepared.
BY MR. SHEEAN:
Q. Since we only have five minutes, I'm going to run through these and introduce them, and then we'll come back to Exhibit 1 in a second.
(Exhibit 2 - UGSI00591-UGSI00609)
BY MR. SHEEAN:
Q. I'm going to hand you what's been marked as Exhibit 2. This is entitled "Correlating Plastic Pipe RCP Field Failures With RCP Critical Pressure For

Water Pipe Applications". It's UGSI00591 through UGSI00609.
(Exhibit 3 - Characteristics of Butt Fusion Joints In Thermal Plastic Pipe For Water Applications.)
BY MR. SHEEAN:
Q. I'm going to hand you what we've marked as Exhibit 3. I'm sorry, I should ask that. With respect to Exhibit 2, did you prepare that document?
A. This looks like the document that I prepared, yes.
Q. I'm going to hand you what we've marked as Exhibit 3, which is titled Characteristics of Butt Fusion Joints In Thermal Plastic Pipe For Water Applications, dated March 7, 2012, presented at MRWA, Illinois AWWA. Do you see that? And then it goes on, and it has some additional presentations?
A. Yes.
Q. Is that a paper that you submitted in conjunction with the presentations to -- on March 7, March 21 and June 5, 2015 -- 2012?
A. I don't recall if I presented the actual paper or if it was the PowerPoint to that.
Q. But this was the paper that would have been submitted in conjunction with the presentation?
A. Yes.

(Exhibit 4 - PowerPoint Presentation)
BY MR. SHEEAN:
Q. Okay. I'm going to hand you what we've marked as Exhibit 4.
MR. FITZPATRICK: Is there a reason there's no bates on the third exhibit?
MR. SHEEAN: None that I can think of off the top of my head.
MR. FITZPATRICK: Do you know if it was produced?
MR. SHEEAN: I don't know if it was or not.
THE DEPONENT: I didn't see bates numbers on this one either, the first one.
MR. FITZPATRICK: There's bates on the first one. That's 677 -- UGSI677 to 739.
THE DEPONENT: Oh, okay. It's on your copy, not mine.
MR. SHEEAN: Oh, that's because he has the color copy.
MR. FITZPATRICK: That's right.
MR. SHEEAN: That's why I did that.
MR. FITZPATRICK: Let me take a minute.
MR. SHEEAN: Why don't we go ahead and change the tape now.

THE VIDEOGRAPHER: We're going off the record at 10:24.
(The deposition was in recess.)
THE VIDEOGRAPHER: The time is 10:34. We're back on the record.
MR. FITZPATRICK: A point of clarity, Chris. I think you made a representation that this first exhibit may have been attached to either the original complaint or the amended complaint.
I don't believe it was attached to either of those pleadings, but it's really not -- I just wanted to --
MR. SHEEAN: Okay.
MR. FITZPATRICK: -- inform the witness, though.
(Exhibit 5 - PowerPoint Presentation)
BY MR. SHEEAN:
Q. All right. I've handed you 1 through 4. I'm now going to hand you 5, which I'm going to go ahead and -- Exhibit 5 is, for the record, a presentation titled "ASCE Pipelines 2012 Conference Designed to Prevent Long-Running Cracks in Plastic Pipe For Water Applications By Dr. Gene Palermo Sponsored By Chevron Phillips Chemical Company". Do you see that?

It's not bates labeled. So I don't have the bates range numbers of it.
MR. FITZPATRICK: Do you have the fourth exhibit?
THE DEPONENT: The fourth exhibit is right here.
MR. FITZPATRICK: Okay.
BY MR. SHEEAN:
Q. Can I see that 5 again real quick? Sorry. Thanks. Sorry.
A. And I think there is a question pending. You said, "Do you see that?" And, yes, I do see that.
Q. Does this appear to be a copy of the -- a black and white copy of the PowerPoint presentation that you made at the 2012 ASCE Pipelines Conference?
A. It does appear to be, yes.
(Exhibit 6 - UGSI00045-UGSI0066)
BY MR. SHEEAN:
Q. I'm handing you what we've marked as Exhibit 6, which is a paper bates labeled UGSI00045 through UGSI0066, entitled Proposal For Revision of AWWA C605-AWWA PVC Committee November 27, 2012 Conference Call By Dr. Gene Palermo. Do you see that?
A. Yes.
Q. It's dated November 27, 2012?

A. Correct.
Q. Does this appear to be a complete copy of that paper?
A. Yes.
(Exhibit 7 - UGSI00067 through UGSI00110)
BY MR. SHEEAN:
Q. I'm handing you what we've marked as Exhibit 7, which is bates labeled UGSI00067 through 00110, and it's titled Proposal For Revision of AWWA C605-AWWA PVC Committee, November 27, 2012 Conference Call. Do you see that?
A. Yes.
Q. Does this appear to be a complete copy of the PowerPoint presentation for that conference call that you had on November 27, 2012?
MR. FITZPATRICK: Objection. Compound.
THE DEPONENT: This appears to be the PowerPoint that I used.
(Exhibit 8 - UGSI00269-UGSI00306)
BY MR. SHEEAN:
Q. Now, I'm handing what we've marked as Exhibit 8, which, for the record, is titled How to Design Against Long-Running Cracks in Plastic Pipe For Warmer Applications. It's bates labeled UGSI00269 through UGSI00306. Do you see that?

A. I see it, yes.
Q. And does this appear to be a complete copy of the PowerPoint presentation that you gave sometime, it looks like, in 2012 at some conference. I'm not sure what that insignia in the bottom right corner refers to. Do you know? Is that WatCon --
A. Water -- I think it's WaterCon.
Q. 2012?
A. Yes. It was one of the conferences.
Q. Okay.
A. I don't recall which one.
Q. I'm sorry, I don't know if I asked that. I apologize. Does this appear to be a complete copy of the PowerPoint presentation that you gave at WaterCon 2012?
A. It appears to be.
Q. Do you recall where that was?
A. No, I don't.
Q. Do you recall the actual date in 2012?
A. I believe in one of the interrogatories that I submitted I had the dates for those, but offhand right now I don't recall the date.
(Exhibit 9 - Correlating Plastic Pipe Field Failures With RCP Critical Pressure For Water Pipe Applications)
BY MR. SHEEAN:

Q. All right. Last but not least, I'm handing you what we've marked as Exhibit 9, and there is no PowerPoint. I downloaded it this morning from your website.
This appears to be Correlating Plastic Pipe Field Failures With RCP Critical Pressure For Water Pipe Applications Presented At the Florida AWWA 12-3-13. Do you see that?
A. Yes.
Q. And does this appear to be a complete copy of the PowerPoint presentation that was given in or around December 3, 2012 at the Florida AWWA?
A. Yes. I believe you initially said this does not seem to be the PowerPoint. I believe this is the PowerPoint.
Q. Oh, if I said that, I apologize. And I will represent for the record that a couple of the slides got cut off on by the annoying footer at the bottom that's put on when you download documents off the internet. So with that caveat, this is a complete copy, right?
A. It appears to be, yes.
Q. Okay. Thank you. I'm going to ask you some questions about Exhibit 1 now, so if you could pull that out. While you're pulling that out, let me

ask you something about what we talked about a few minutes ago before the last break.
Specifically in response to some questions about the word "prone", I asked you what you meant by "prone". Do you recall what you testified? It's not a memory quiz. I just want to make sure I get it accurately.
A. I think I said something to the effect that prone means is likely to.
Q. Okay. Do you provide --
A. Susceptible to.
Q. Okay. I'm sorry. Do you tell your audience members what you mean by "prone" when you describe to them that -- your belief that fusible PVC pipe is prone to RCP?
MR. FITZPATRICK: Objection to form. Assume facts not in evidence.
THE DEPONENT: I'm not sure I used the word "prone" that often myself. I think I used the word "more susceptible to".
BY MR. SHEEAN:
Q. Okay. Have you -- but -- strike that. You believe you may have used the word "prone" in past presentations regarding RCP. Wasn't that your testimony?

MR. FITZPATRICK: Objection. Misconstrues.
THE DEPONENT: That was the word that you used. I don't recall if I actually used that word or not or if I -- my recollection is I think I used the word more that it's susceptible to.
BY MR. SHEEAN:
Q. Okay. So, as you sit here today, you may have used the word "prone". You just don't recall ever using it?
A. I don't recall, yeah.
Q. Looking at Exhibit 1, is there anything contained within this exhibit that you now believe to be inaccurate?
MR. FITZPATRICK: Object to the form.
THE DEPONENT: I think over the last couple of years as I've obtained more information about these incidents, I think there might be a minor correction to some of the lengths.
I know that's something that's always very difficult to obtain. A lot of times the length is not accurately known. It's not known until a long time later, and in some cases it's never really known for sure what the length is.
So these are lengths that I would have

recorded at the time, which I -- was based on the information provided to me at the time which I felt was accurate. Some of those may have -- numbers may have changed over the last couple of years as we gathered more information.

BY MR. SHEEAN:

Q. Anything else in Exhibit 1?

MR. FITZPATRICK: Same objection.

THE DEPONENT: Scanning through this, I don't see anything else.

BY MR. SHEEAN:

Q. Okay. We'll go through these incidents more carefully in a minute, but you just said that it's often not known exactly what the length of the crack is. You don't say approximate like the crack on page three of Exhibit 1, do you?

MR. FITZPATRICK: Objection. Misconstrues the testimony. Go ahead.

THE DEPONENT: I say the length of the crack, and I'm reporting what was reported to me was the length of the crack.

After further investigation, sometimes these numbers are revised slightly. So it's -- this is the best number that I have at the time on what the length of the crack was.

BY MR. SHEEAN:

Q. Where on slide three or anywhere within this document do you advise the reader that your report of the length of the RCP crack is an estimate and is based on third-party reports that you haven't been able to independently verify?

MR. FITZPATRICK: Objection to form. Misconstrues.

THE DEPONENT: When I give the presentation, I don't go through each one and specifically say, "This is the length. This is the length. This is the length."

This is more intended when I give the presentation to be an overall capsule of the number of failures that have occurred. I don't really hone in on the exact pipe size or the exact DR or the exact length of it.

It's more to give the audience an understanding of the quantity or the number of failures that have occurred.

BY MR. SHEEAN:

Q. Well, your answer reminds me to ask you this: This document was on your website available for public downloading and viewing to anyone who went to PlasticsPipe.com, correct?

A. I don't know if it was this one. There's -- there are two documents on my website. I don't remember which one is actually the one that's on there.

Q. Is it possible that this document was on your website for several months including prior to the filing of this lawsuit?

A. Yes.

Q. Okay. Please identify for me what on page three tells the reader that the length of the RCP crack is approximate.

MR. FITZPATRICK: Objection to form. Misconstrues.

THE DEPONENT: When I give the presentation to the audience -- and that's what this is. This is a PowerPoint given to an audience, and I speak verbally to the audience.

The intent of this slide when it's on the screen and I'm talking, I don't go into the specifics of the length of the crack or what caused the failure to occur.

I simply refer to this as the number of failures that have occurred, and that's -- that's really the only amount of time that I spend on this slide.

BY MR. SHEEAN:

Q. Is it your testimony that you advise the attendees of your PowerPoint presentations when they're shown this slide that you tell them these are approximate lengths and that they are obtained from third-party reports?

A. I don't recall going into that detail.

Q. Okay. And there's nothing on this page that tells a reader who downloads this off the internet that your reports of the length of crack are approximate and based on third-party reports?

MR. FITZPATRICK: Objection to form.

BY MR. SHEEAN:

Q. Isn't that true?

MR. FITZPATRICK: Form. Misconstrues.

THE DEPONENT: Yeah, there's nothing on the slide itself which says that it's -- that's it's approximate. These are simply the numbers that I -- were reported to me, and these are the reports that I then report.

BY MR. SHEEAN:

Q. Okay. You indicated that you would make some minor corrections to some of the lengths. Do you recall which one of these 20 incidents you would correct the length measurement on?

MR. FITZPATRICK: Objection. Form.
THE DEPONENT: Right offhand, no, I don't.
BY MR. SHEEAN:
Q. Okay. Have you ever done anything to advise any individual who viewed your presentation that you had erred in reporting the crack length on any of these incidents?
MR. FITZPATRICK: Objection to form. Misconstrues.
THE DEPONENT: I don't consider that I'm erring in reporting them, but simply what was reported to me. That may or -- that number may or may not change later, but it was -- to the best of my understanding and belief, that was a correct number at the time that I reported it.
BY MR. SHEEAN:
Q. Okay. Have you ever taken any action to advise an attendee to one of your presentations that the length of crack reported in your PowerPoint presentation turned out to be in excess of what was actually later discovered?
MR. FITZPATRICK: Same objections.
THE DEPONENT: It would be almost impossible to do that. I have no idea who was in

the audience.
BY MR. SHEEAN:
Q. So is that a no?
A. That's a no.
MR. FITZPATRICK: Same objection.
BY MR. SHEEAN:
Q. Thank you. Looking at Exhibit 1 as a whole, is there anything in this document that you now consider, as you sit here, to be untrue?
MR. FITZPATRICK: Objection. Asked and answered. I mean, he's asking questions about 30 or 40 page documents. Anything in them -- and go through every item in this document and take as long as you need.
THE DEPONENT: And your question is: Is there anything in here which I now believe to be --
BY MR. SHEEAN:
Q. Untrue.
A. -- untrue?
Q. My prior question was whether it was inaccurate. Now my question is: Is it untrue? If you consider those to be the same thing, then you can answer based on that.
MR. FITZPATRICK: Objection to form.

THE DEPONENT: I mean --
MR. FITZPATRICK: Gene, go ahead. I mean, you're asking to opine about --
THE DEPONENT: Right. I just want to make sure I understand the question and to formulate my answer.
I perceive a difference between the first term you used "inaccurate" and the second term you are now using, which is to be untrue. I perceive those two to be different.
BY MR. SHEEAN:
Q. Okay. What is the difference in them?
A. Inaccurate I perceive to be if there's something in the report which is a certain value and then later it's deemed to be a different value, that would be perhaps construed as being inaccurate.
If it's untrue, I perceive that as being different from inaccurate. If it's not true, that means that it's -- that it's simply wrong, and you're now asking me is there anything here that's wrong or untrue.
MR. FITZPATRICK: Is that a fair assessment?
THE DEPONENT: I just want to understand what his understanding is.

MR. FITZPATRICK: So what is he looking for now? Untrue?
MR. SHEEAN: He already did inaccuracies. Now he's doing untruth.
MR. FITZPATRICK: Untruth?
MR. SHEEAN: That's correct.
MR. FITZPATRICK: Objection to form. Ambiguous. Vague.
THE DEPONENT: I believe there's some question about the length of the crack. The first one was in Jacksonville, Clay County. I believe it's the same thing here on the third slide. So that would come under the maybe inaccurate rather than untrue.
BY MR. SHEEAN:
Q. I'm sorry, was that the 600 foot crack or 1,600 foot crack?
A. The 600.
Q. Okay.
A. The same with the Dorchester County. When -- when first reported, the contractor reported or stated it was a -- about a 2,200 foot crack. Since that time they have not been able to -- because a lot of it is underwater, they don't know exactly if it was that number or something less. So that's -- there's

some question about that number.

I see in this slide I titled it Louisiana Water Company, and then later I say Texas Water Company. When talking to the company directly, the water company directly, they asked me not to reveal the name.

They said use Texas or Louisiana, and I see that I actually used both names. It's correct, but it's probably more -- more correct to say Louisiana slash Texas Water Company.

MR. SHEEAN: For the record, the witness is referring to what's bates labeled USGI00716 on the bates label copy. I know your copy doesn't have any bates on it.

MR. FITZPATRICK: What I recall what his question is: Identify things that you know to be untrue within this document.

THE DEPONENT: I think this would be more -- more -- it would be more accurate to say Louisiana slash Texas Water Company than just the Louisiana.

MR. FITZPATRICK: So --

THE DEPONENT: Would that be considered untrue or inaccurate or --

BY MR. SHEEAN:

Q. I'm basing it off of your understanding, sir.

A. Okay.

MR. FITZPATRICK: This is the problem. So --

THE DEPONENT: Right. So this should more correctly be Louisiana slash Texas Water Company. You can decide which is the nomenclature better to correct that.

MR. FITZPATRICK: For the record, Mr. Sheean said Exhibit 9 was last but not least. I think we're going to hold him to that.

MR. SHEEAN: Of the presentations, that's right.

MR. FITZPATRICK: I don't remember that qualifier.

THE DEPONENT: Okay. I don't see anything here that off the top of my head right now I could -- I could say that -- I would say is untrue.

BY MR. SHEEAN:

Q. As you sit here today, is there anything in Exhibit 1 that you consider to be misleading?

A. No.

Q. Okay. As you sit here today, do you -- is there anything in Exhibit 1 that you consider to be no longer applicable?

MR. FITZPATRICK: Objection to form.

THE DEPONENT: Having scanned it, everything in here is -- I believe is accurate, and I still believe what's in here.

BY MR. SHEEAN:

Q. Okay. Looking at slide -- or page three of Exhibit 1, which is the known RCP field failures, do you see that?

A. Yes.

Q. What is meant by the term "known" in that page?

A. These are RCP failures that -- that I am aware of; meaning, they're known. They have been made known to me with the exception -- and I do not get into that in the presentation, with the exception of approximately a half a dozen or so RCP failures that were made known to me as part of the P&F versus UGSI lawsuit.

Subsequent to the settlement of that lawsuit, that information became privileged by a protective order, and I am not allowed to disclose that information. So -- and I do not state that to the audience.

So these are basically RCP field failures that are known to me that I am aware of excluding the ones that are known to me that are protected by the protective order.

BY MR. SHEEAN:

Q. Do you point out to the audience members in your presentations that what you mean by "known" is that you are aware of these failures?

A. Yes. I say that these are the ones that I'm aware of.

Q. Do you discuss in your presentations any efforts by you to verify the underlying information?

A. No. Generally the presentation is maybe a half hour. I don't have time to do that.

Q. Each of the projects listed on this slide involve fusible PVC pipe, correct?

A. Yes, that's correct.

Q. And, to your knowledge, did each of these incidents involve pipe that was manufactured by Underground Solutions or one of its licensees?

A. That's my understanding.

Q. And you were aware of that when you prepared that slide, weren't you?

MR. FITZPATRICK: Objection. Form.

THE DEPONENT: Yes. As we discussed

earlier, UGSI is the only licensee for the manufacture of fusible PVC pipe.
BY MR. SHEEAN:
Q. What makes a crack in a pipe a field failure?
A. If it occurs in the field.
Q. In your opinion, can a crack that occurs when the pipe has not been installed correctly be deemed an RCP failure -- a field failure?
A. Yes.
Q. So even though it hasn't been put into service yet?
A. Whether or not the pipe has been put into service has nothing to do with whether it's a rapid crack propagation. In fact, most of the RCP failures that have been known to occur in plastic pipe occur during the pressure test, which is before it's placed into service.
Q. Do you believe that a long-running crack in a pipe can be classified as a known RCP field event even when the cause of the event was due to the failure of the operator to follow the manufacturer's instructions?
A. Yes, to be defined as an RCP failure. It has nothing to do with how it was installed or how it

was manufactured. It's simply a rapid crack propagation event by definition.
Q. Do you ever explain in your PowerPoint presentation that's Exhibit 1 that the cause of a crack is irrelevant to your classifying it as an RCP field failure?
MR. FITZPATRICK: I'm going to object to form. Do you mean is that content within the presentation itself or does he explain that as part of the presentation?
MR. SHEEAN: My question relates to this PowerPoint that is Exhibit 1 right now.
MR. FITZPATRICK: Is that --
MR. SHEEAN: -- that's correct.
MR. FITZPATRICK: Okay.
THE DEPONENT: When I give the --
BY MR. SHEEAN:
Q. That's not my question, sir.
A. Okay.
Q. My question is: The document that's in front of you, do you explain in that document anywhere that your definition of RCP -- known RCP field failures includes any event regardless of whether it was caused by disregard of manufacturer's instructions?
A. In answering that question, are you

including when I give the presentation?
Q. No, sir, I'm not.
A. Okay.
Q. I'm going to get -- that's my next question.
A. Okay.
Q. You want it again?
A. Yes.
Q. Okay. In Exhibit 1, do you anywhere explain to the reader that the term "known RCP field failure" includes long-running cracks that were caused by the disregard of the manufacturer's instructions by the operator?
A. Yes.
Q. Where?
A. Well, you said explain to the reader. I explained verbally to the -- to the reader of the PowerPoint.
Q. But the beginning of the question was in the document.
A. In the document itself --
Q. Yes, sir.
A. -- in the PowerPoint that's on the screen you're talking about?
Q. That's correct.

A. No.
Q. And so if a reader were able to download this off of your website, they would have no way of knowing whether or not your definition of "known RCP field failures" includes disregard of the manufacturer's instructions, correct?
MR. FITZPATRICK: Objection. Form, foundation. Calls for speculation.
THE DEPONENT: Yeah, I don't know what the person who looks at this would understand. The main thing I want them to understand is these are known RCP field failures regardless of how they occurred.
BY MR. SHEEAN:
Q. How would the reader of Exhibit 1 who downloaded this off the internet know that your definition of "known RCP field failures" includes instances where the operator has disregarded the manufacturer's instructions?
MR. FITZPATRICK: Same objections: Form, foundation. Calls for speculation, and misconstrues the testimony.
THE DEPONENT: It doesn't matter how the pipe was installed. It's simply a list of field failures, RCP field failures, that are known.

MR. SHEEAN: Can you read my question back? I don't think Dr. Palermo understood it.
(The record was read by the Court Reporter.)
MR. FITZPATRICK: The same objections.
THE DEPONENT: This is a list of known field failures. I'm not saying anything about if it was installed properly, if it was installed improperly, if it was pressure tested properly, if it was put in the ground properly. It's simply a list of known field failures.
BY MR. SHEEAN:
Q. I'll try it another way. Is there anything in Exhibit 1 that would inform the reader that your definition of "known RCP field failures" includes incidents where the operator failed to follow the manufacturer's instructions? It's a yes or no question.
MR. FITZPATRICK: However you want to answer it you can, Gene. He can't confine your answer.
THE DEPONENT: No. I was simply going by the dictionary definition of the word "known".
BY MR. SHEEAN:
Q. So there's nothing in this document that would advise the reader that your definition of "known

RCP field failures" includes incidents where the operator failed to follow the manufacturer's instructions, correct?
A. That's correct because it's irrelevant.
Q. Okay. You also believe -- strike that. Do you believe that a long-running crack that occurs during pressure testing of the pipe can be properly construed as a field failure?
A. If a long-running crack occurs in the field, it is a field failure.
Q. Even if it occurs during pressure testing?
A. That has nothing to do with whether it's a field failure.
Q. Does a failure that occurs during pressure testing constitute a field failure, in your opinion?
A. Yes.
Q. Thank you. Do you explain anywhere in Exhibit 1 to the reader who downloads this off the internet that your definition of field failure includes incidents that occur during pressure testing?
MR. FITZPATRICK: During pressure testing?
MR. SHEEAN: That's right.

MR. FITZPATRICK: Take a moment, Gene, review the document. He's referring to the entire Exhibit 1.
THE DEPONENT: Okay. Repeat your question again.
BY MR. SHEEAN:
Q. Does Exhibit 1, if downloaded off the internet, advise the reader anywhere that field failures from slide three includes failures that occurred during pressure testing?
A. Yes.
Q. Where is that?
A. On this slide here, actual field experience Chatham, Illinois. It specifically states that the RCP failure occurred during the leak pressure test, and also in the next slide for Dorchester County, it states this occurred during the leak pressure test.
MR. FITZPATRICK: Keep going.
THE DEPONENT: I also under my recommendation state, "The PVC pipe internal pressure during both operation and leak pressure testing shall be maintained below the PVC pipe full scale RCP critical pressure." That was one of my recommendations.
BY MR. SHEEAN:

Q. Are you done?
A. Yes.
Q. Okay. Sorry. At the time you prepared Exhibit 1, you were paid by the alliance -- the PE Alliance; is that correct?
MR. FITZPATRICK: Objection to form.
THE DEPONENT: I developed the presentation to give the message that I wanted to give to the audience. It was the presentation that I wanted to give, and my expenses were covered by the various clients.
BY MR. SHEEAN:
Q. By the PE Alliance?
A. That was one of them.
Q. And not just your expenses, but your time as well, correct?
A. Correct.
MR. FITZPATRICK: Objection to form.
BY MR. SHEEAN:
Q. To clear up Mr. Fitzpatrick's objection, your expenses and your time to prepare Exhibit 1 were paid by the PE Alliance and other clients; is that right?
MR. FITZPATRICK: Same objection.
THE DEPONENT: I know the alliance

covered my expenses and time for the presentation. I don't recall if they paid or somebody else covered the actual time to prepare the -- my PowerPoint.
BY MR. SHEEAN:
Q. So this was -- okay. I'm sorry, this was given in March of 2013. What other clients would you have billed for preparing a PowerPoint at that time involving RCP and fusible PVC pipe?
MR. FITZPATRICK: Objection. Misconstrues.
THE DEPONENT: By that time most of the PowerPoint slides that I had prepared were prepared prior to that time.
BY MR. SHEEAN:
Q. So when you say they were paid for by other clients, you were using slides that had prepared -- been prepared previously when you were paid by other clients?
A. Which I prepared.
Q. Right. Yes, yes.
A. Yeah, I am the one that prepared the slides to present the information that I wanted to present. It was my PowerPoint presentation.
Q. Right. And you were paid for that by

either PE Alliance or Performance Pipe; is that right?
MR. FITZPATRICK: Objection. Paid for what?
MR. SHEEAN: His time.
MR. FITZPATRICK: His time in doing what, make a presentation or preparing it because he's already testified to both of those issues?
MR. SHEEAN: Yeah, I'm just trying -- trying to wrap it all into one.
MR. FITZPATRICK: Well, let's be specific about the time that we're referring to so we don't muddy the record.
MR. SHEEAN: If you want to ask him questions after 4:30, knock yourself out.
MR. FITZPATRICK: Well, just -- let's ask some clear questions occasionally.
MR. SHEEAN: Okay. Try not to coach the witness so much.
MR. FITZPATRICK: Asked and answered.
BY MR. SHEEAN:
Q. Mr. Palermo, just to confirm, when you prepared Exhibit 1, the time that you spent in preparing the PowerPoint slides that make up that presentation was compensated by either Performance Pipe or the PE alliance; is that right?

MR. FITZPATRICK: Objection. Form. Misconstrues.
THE DEPONENT: Or it could have been possibly another one of my clients. When I spend time doing something as a consultant, like any consultant, I get paid for my time --
BY MR. SHEEAN:
Q. Sure.
A. -- to do something.
Q. What other clients would you have billed for preparing slides like these?
MR. FITZPATRICK: Same objection. Asked and answered.
MR. SHEEAN: I didn't ask this one.
MR. FITZPATRICK: That's exactly --
THE DEPONENT: P&F Distributors.
BY MR. SHEEAN:
Q. Anyone else?
MR. FITZPATRICK: The same.
THE DEPONENT: That's -- the best of the my recollection, that would be it.
BY MR. SHEEAN:
Q. Did you advise your audience in Michigan when you presented Exhibit 1 that you were paid by the PE Alliance to make that presentation?

A. To the best of recollection, somewhere from -- at the end of the presentation, someone from UGSI asked me who sponsored the presentation, and I answered the polyethylene industry.
Q. Do you recall who that was from Underground Solutions?
A. No. Almost every presentation I give someone from UGSI asks me who sponsored the work, and I would always answer either Chevron Phillips or the polyethylene industry.
Q. If no one was there to ask you that question at one of these presentations, would you disclose that information unilaterally?
MR. FITZPATRICK: Objection. Form. Incomplete hypothetical.
THE DEPONENT: In some of the presentations I actually put on the front page who it was sponsored by.
BY MR. SHEEAN:
Q. Okay. If it's not on the front page, would you make it a point to make sure that everybody knew you were being paid by the PE industry?
MR. FITZPATRICK: Same objection.
THE DEPONENT: If somebody asks me that question, I would certainly reveal.

BY MR. SHEEAN:
Q. What if they didn't ask the question and it wasn't on the PowerPoint slide, would you advise the audience that you were being paid by the PE industry?
A. If the question came up and no one had an interest, no.
Q. And Exhibit 1 does not disclose anywhere on it that you prepared this in sponsor -- strike that. Exhibit 1 does not advise the reader that you were paid by PE Alliance, Performance Pipe and/or P&F for -- for the slide show that is Exhibit 1?
MR. FITZPATRICK: Objection. Form. Misconstrues the testimony.
BY MR. SHEEAN:
Q. Is that right?
MR. FITZPATRICK: Objection to form. Misconstrues the testimony. Go ahead.
THE DEPONENT: There's nothing on the front page that indicates that, correct.
BY MR. SHEEAN:
Q. Is there anything on any page that indicates that?
A. No.
MR. FITZPATRICK: The same.
BY MR. SHEEAN:

Q. Let's go back to page -- slide three.
A. Could you go back to that last question? I just want to make sure I understood. Have the last question read again?
(The record was read by the Court Reporter.)
THE DEPONENT: Okay. I think it's important for me to state that -- and I think I said it before, that this is a PowerPoint presentation that I put together based on my belief.
Now, I may have been compensated for, sponsored by other organizations, but it's -- it's my PowerPoint. I put it together, and I'm stating what I believe to be factual information. And it's something that I put together myself. I just want to make sure we're clear on that.
BY MR. SHEEAN:
Q. Okay. Just to be clear, you're not changing your answer. So I want to make sure that I get the right question.
Is there anything on any of the pages that are -- have been marked as Exhibit 1 that would advise the reader that you were paid by the PE Alliance, Performance Pipe or P&F Distributors to compile this information?

MR. FITZPATRICK: The same objection. Misconstrues the testimony. False predicate.
THE DEPONENT: My answer would be there's nothing on here that would tell the reader that, correct.
MR. SHEEAN: John, you can just object to form and save us all time?
MR. FITZPATRICK: If you can accept the answers and ask new questions.
BY MR. SHEEAN:
Q. All right. Now we're going to go to page three. Thank you. Looking at incident number one, Winter Park, Florida, it says date of RCP failure, 2004; pipe size and DR, eight inch DR18; length of crack, 200 feet; joined by butt fusion, Y. Did I read that correctly?
A. Yes.
Q. And joined by butt fusion, Y, that means yes?
A. That's correct.
Q. What did you do to verify any of the facts listed in line one relating to the Winter Park, Florida RCP failure?
A. For all of these, it was either photographs or I saw the information, reports where I

saw the information. Many times I was provided with the phone number -- the name and phone number of a contractor who was involved or the water company, and I would call the contractor or water company to -- to get that information. So it was a variety of different sources.
Q. I'm interested specifically in the Winter Park, Florida incident. I know you were sort of lumping them together. To your -- to your recollection, what specific steps did you take to verify the facts that you list in number one?
A. Specifically for number one, I don't recall.
Q. What was the basis for your -- the information in number one regarding the length of the crack?
A. You just asked me where I got the information.
Q. That was overall. Now I'm asking specifically about the length of the crack.
A. Well, it would be my same answer for anything there. I -- I don't recall the information for the year, the size, the DR, the length. I know there were documents that I reviewed or phone calls that I made, but I don't recall which -- where the

source came from.
Q. That page number three of Exhibit 1 does not advise the reader of the cause of the Winter Park incident, does it?
A. No, it does not.
Q. Why didn't you advise the audience of the cause of the incident in Winter Park?
A. Well, first of all, for many of these the cause is -- is not known. For some of them it is known. In my presentation and the purpose of the presentation is to advise the audience about the fact that these RCP field failures occurred, and I verbally tell the audience that they occur for a variety of reasons.
And I mention specifically that some are due to occur during the leak pressure test. Some are due to over -- over bending or over stressing. Some are due to an improper tapping operation.
I mentioned that verbally, but specifically going through each one and stating exactly what the cause is, many times it's -- it's not known exactly what the cause is.
Q. But where it is known, wouldn't it be helpful to the audience members to know?
MR. FITZPATRICK: Objection. Form.

THE DEPONENT: Well, I already answered that I tell the audience it's due to a variety of causes. What causes the exact cause of the RCP failure is not as important as the fact that it occurred, and it occurs a number of times over and over, which leads me to the belief that when PVC pipe, which is a known material to be susceptible to R -- to RCP failures, which it has many, many hundreds of thousands of times, and when it's butt fused, that can lead to long lengths.
So it doesn't matter what the cause is. It's the fact that it occurs. These are known failures, and they occur for very long lengths.
BY MR. SHEEAN:
Q. Would you agree that many of the instances that you've described already involving contractor error are preventable?
A. Are you asking if the error is preventable?
Q. Yes, sir.
A. The error itself is preventable. I don't know if you could say the RCP failure is preventable.
Q. So you can avoid a rock impingement if you follow the manufacturer's instructions and install the pipe properly, can't you?

MR. FITZPATRICK: Objection to form. Calls for nonfact testimony.
THE DEPONENT: For any plastic pipe, you can certainly decrease the probability of failure if it's installed properly.
BY MR. SHEEAN:
Q. You can avoid what you classify as a -- as an RCP event in Pittsburgh, Pennsylvania if you -- if the contractor doesn't try to bend the pipe beyond the minimum bend radius in the parking lot, can't you?
MR. FITZPATRICK: Same. Form.
THE DEPONENT: If the contractor didn't try to install it, yes, you -- you could avoid it. The point -- the important point is the fact that when it's installed under some conditions, this particular material is susceptible to RCP failures.
BY MR. SHEEAN:
Q. You've already testified that -- that you consider it part of the reason why you're giving this presentation to improve the perception of the plastic pipe industry, right?
A. To improve the overall integrity of plastic pipe that's installed, yes.

Q. And in order to improve the perception of the plastic pipe industry, wouldn't you want to advise the customers that in any of these instances where contractor error was the cause this was an avoidable incident?
A. Well, I state in the presentation that a number of these do occur as a result of over bending or something that -- a rock impingement, et cetera.
Q. But, again, it's not listed anywhere on page three of Exhibit 1 or anywhere else in terms of describing the specific cause of the -- of the -- of these failures, correct?
A. You're correct in the fact that there's nothing here that describes the cause of the failure. The purpose of this chart is to summarize the RCP field failures that have been known to occur.
Q. Wouldn't it help improve the overall perception of the plastic pipe industry if your presentation informed the potential consumers of plastic pipe that the cause of these incidents is avoidable?
MR. FITZPATRICK: Objection. Form. Calls for speculation.
THE DEPONENT: I think it would improve the overall performance of this particular plastic

pipe if the audience that listened to my presentation read my recommendations and followed my recommendations.
BY MR. SHEEAN:
Q. You didn't answer my question, sir. Let me try it again.
A. I thought I did.
Q. Would you agree that supplying the potential customers of plastic pipe with the information that would allow them to avoid what you deem to be RCP failures would improve the overall perception of the plastic pipe industry?
MR. FITZPATRICK: Again, form.
THE DEPONENT: And if they follow my recommendations, they would avoid --
BY MR. SHEEAN:
Q. I'm not asking about your recommendations. I'm -- I'm asking you if you had described the cause and how to avoid that cause by following the manufacturer's instructions, wouldn't that help improve the overall reputation and perception of the plastic pipe industry?
MR. FITZPATRICK: The same, form.
THE DEPONENT: These are failures that occur as a result of installation. When you have

installation, you're going to have some operator error. You're going to have some cases where it's over bent. You're going to have some cases where it's installed on a rock.
These are -- that's the real world. You're going to have that, and that's why it's not that critical what the actual or specific cause of the failure was.
What's more important is the fact that this particular pipe with that particular DR, dimension ratio, is susceptible, prone or whatever word you want to use to RCP failures and what can the end-user do to prevent that. And that's where my recommendations come in.
BY MR. SHEEAN:
Q. We're going to get to your recommendations, but you still haven't answered my question. And that is -- you can disagree if you want.
I just want -- you know, I want to understand if you agree or disagree that supplying potential customers with the cause of these field incidents that are avoidable following the manufacturer's instructions would help to improve the perception of the plastic pipe industry as a whole?

MR. FITZPATRICK: Objection to form. Asked and answered.
BY MR. SHEEAN:
Q. Do you agree with that or not agree?
A. If the pipe is installed with no rocks, if the pipe is never bent, if the pipe is never butt fused improperly, if the pipe is never tapped improperly, if the pipe is never cut improperly, if the pipe is never subjected to any of these potential causes of RCP, then that would reduce the probability of these failures occurring and would improve the overall performance of the PVC pipe.
Q. So you agree that advising consumers that following the manufacturer's instructions to reduce the risk of field failures would improve the perception of the plastic pipe industry?
A. Yes.
Q. Thank you.
A. And if I can follow up on that, that would be true for -- for any product if you follow the -- the proper instructions.
The issue here is that in the real world sometimes the exact properly installation procedures are not followed, and that can lead to failures. And that's what we're talking about here.

Q. With respect to incident number two on page three of Exhibit 1, Danville, California, what, if anything, did you do to verify the pipe size and DR?
A. The same answer as to number one.
Q. You don't recall?
A. Correct.
Q. What did you do, if anything, to verify the length of the RCP crack listed on page three of Exhibit 1 for Danville, California?
A. I don't recall.
Q. Did you personally inspect the pipe that was the subject of the field failure in Danville, California?
A. I did not personally inspect any of these.
Q. Okay. With respect to -- oh, sorry. For number two, do you know what the cause of that field failure was?
A. I don't recall.
Q. With respect to number three, Collier County, Florida in 2007, what did you do to verify the length of the RCP crack?
A. To the best of my recollection, I believe that was in a report or a paper that I read about it where it was reported to be that length.

Q. Anything else?
A. No.
Q. Is that also how you verified the pipe size and DR?
A. As I recall, yes. That particular one, I recall reading a report or an article about it.
Q. Anything else?
A. I believe that's it.
Q. What was the cause of the --
A. Oh, let me back that up. It may depend on the -- because it also involved in that case -- and there may have been -- again, I don't remember the timing of it, but there may be additional information that I obtained as a result of being involved with that case that substantiated that information.
Q. When you say "involved with that case", what do you mean?
A. I was hired by Hazen and Sawyer, I believe, as an expert witness in the -- in the lawsuit between Collier County and somebody else. Hazen and Sawyer was part of that.
Q. So in conjunction with your role as an expert in that case, did you receive any additional information besides the report that you previously testified about?

A. I believe I may have.
Q. Do you recall, as you sit here today, what else you reviewed?
A. No, just the fact that I had other documents which substantiated it.
Q. Did you testify in that case?
A. No, I did not.
Q. What was the outcome? Do you recall?
A. My recollection is it was settled, but the agreements of the settlement are not disclosed.
Q. Do you have a recollection, as you sit here today, as to what your understanding of the cause of that incident was?
A. This particular incident, as I recall, occurred as a result of a leak pressure test.
Q. De-pressure test?
A. A leak pressure test, sorry.
Q. Do you have any of that -- do you recall any of the underlying details regarding the leak pressure test in terms of was it done incorrectly or --
A. My recollection is that there was some -- some discussion or question about the cap that was used, and also there was some discussion about perhaps -- especially in the areas where the pipe

shattered considerably, but there may have been quite a bit of entrapped air there. And that's why it -- the failure mode in that case was the shattering of the pipe.
Q. When you say "shattering", I mean, that sounds different to the un -- the non-industry people from a long-running crack. Is that different in your mind?
A. Yes. I can show you pictures --
Q. Sure.
A. -- of what I mean. Sometimes the crack runs --
Q. Is that the next page, page four?
A. Yeah. Also here's a -- exactly. Yeah, here's a couple of examples. In the first Clay County one, you can see it's more or less of a straight line.
In the second Clay County one, again, it's more or less of a straight line. Xenia, the same thing. Baton Rouge, the same thing. In the rock impingement failure, Collier County, it's more of a straight line.
Sometimes it bifurcates. This one is called bifurcating, when it splits into two. In the case of this one --
Q. And by "this one", you're referring, for

the record, to --
A. Yes.
Q. -- UGSI00680 on the fourth page of Exhibit 4 -- Exhibit 1?
A. This is the first Collier County failure I recall.
Q. Right.
A. Which failed as a result of the test pressure.
MR. FITZPATRICK: Just a moment.
THE DEPONENT: I'm sorry.
MR. FITZPATRICK: Let's take a break. I'm going to compare these two.
MR. SHEEAN: Can he finish his answer while -- I just asked him about shattering. He was talking about shattering.
MR. FITZPATRICK: Well, the problem is that I think he's looking at an exhibit which is different from the exhibit that --
MR. SHEEAN: We can correct that when he's done with his answer.
MR. FITZPATRICK: Well -- all right. Go ahead.
THE DEPONENT: What I mean by shattering is the pipe breaking into small pieces.

BY MR. SHEEAN:
Q. Is it still an RCP in your mind?
A. Yes.
Q. Okay.
A. All of these are rapid crack propagation failures.
Q. I thought you'd say that, but I have to ask.
MR. SHEEAN: Now you want to take a break?
MR. FITZPATRICK: Yeah, let's take a break.
THE VIDEOGRAPHER: 11:44. Going off the record.
(The deposition was in recess.)
THE VIDEOGRAPHER: The time is 11:59. We are back on the record.
BY MR. SHEEAN:
Q. All right. Doctor, we were going through the items listed on page three of Exhibit 1, UGSI00679 for the record, and I want to move on to number four on that page, which is Greencastle, Indiana. Do you see that?
A. Yes.
Q. What, if anything, did you do to confirm

the pipe size and DR referenced on that page for Greencastle, Indiana?
A. I reviewed documents that I saw, reports.
Q. What documents or reports did you see involving the Greencastle, Indiana incident?
A. I -- I don't recall now. I just recall seeing documents about it.
Q. Did you have any photos of that incident?
A. I believe the documents had photos, yes.
Q. Where did you get those documents from?
A. I don't recall.
Q. And is that also where you got the information regarding the length of the -- the alleged length of the RCP crack?
A. Yes.
Q. What was the cause of the Greencastle, Indiana incident, if you know?
A. My recollection is it may have been a cutting operation or a tapping operation, something of that nature.
THE VIDEOGRAPHER: Pardon me, sir. Could you put your microphone back on? I could hear you fine.
THE DEPONENT: Oh, sorry.
THE VIDEOGRAPHER: You're picking up off

the other one.
THE DEPONENT: It's way down here. Sorry about that.
THE VIDEOGRAPHER: Not a problem.
BY MR. SHEEAN:
Q. Do you disclose the details of that cause anywhere in Exhibit 1?
A. No.
Q. And with respect to incident number five, Greencastle, Indiana (2), where did you obtain the information for that incident?
A. The same thing.
Q. Does that include the 43-foot crack length?
A. Yes.
Q. And in your mind does that 43-foot crack constitute an RCP incident?
A. For 10-inch pipe, yes.
Q. What was the cause of that failure?
A. I believe it was also a cutting operation or a tapping or something of that nature.
Q. Did you disclose anywhere in Exhibit 1 your understanding of the cause of incident number five, the second Greencastle, Indiana incident?
A. No.

Q. Number six is Pittsburgh, Pennsylvania, 2007; is that right?
A. Yes.
Q. And you listed it as a 24 inch DR 25, correct?
A. Correct.
Q. A 160 foot length of RCP crack, that's what you report?
A. That's correct.
Q. Where did you get the details for that incident?
A. I don't recall. It could have been a report that I read, a document that I read. I don't recall.
Q. Did you personally inspect the pipe that was involved in that incident?
A. As I stated before, I did not personally inspect any of these failures.
Q. Did you do anything else to verify the facts stated regarding the Pittsburgh, Pennsylvania incident on page three of Exhibit 1?
A. Other than reviewing the reports, documents about this incident, no.
Q. What was the cause of that incident?
A. I believe -- I'm not positive. That one

may have been a bending failure.
Q. Do you indicate anywhere in Exhibit 1 that the cause of the Pittsburgh, Pennsylvania incident listed on page three was a bending failure?
A. No, I do not.
Q. Did you ever have the opportunity to ascertain which party was responsible for that incident?
A. What do you mean by "which party"?
Q. The contractor, the subcontractor, the municipality, God.
MR. FITZPATRICK: Object to form. Go ahead.
THE DEPONENT: My recollection it was whoever was doing the installation.
BY MR. SHEEAN:
Q. Do you advise the reader anywhere in Exhibit 1 that you understood the installer to be the party at fault regarding the incident that occurred in Pittsburgh, Pennsylvania?
A. No.
Q. Seven and eight are two separate references to Clay County, Florida. I know we've seen a picture, and we'll get into those pictures in a little bit.

But with respect to the first one, what, if anything, did you do to verify the facts listed, specifically 20 inch DR 18, 600 foot alleged RCP crack?
A. Again, it was photos, documents, reports that I had regarding that.
Q. Where did you get the photos and documents that you reviewed?
A. They were sent to me or I asked for them. I don't recall where I got them from. I just recall reading them and reviewing them.
Q. Is that also true for number eight, the second --
A. Correct for both of those.
Q. Did you do anything besides reviewing those documents to verify the alleged length of the cracks in seven and eight?
A. No. The numbers came from the documents.
Q. Were you able to make a determination as to the cause of incident number seven in Clay County, Florida?
A. I knew at one time. I don't recall now.
Q. How about number eight?
A. Same for both. I don't remember whether if it was over bending or a saw cut. I don't think it was a tapping operation. It was either a saw or a

bending.
Q. Do you advise the reader anywhere in Exhibit 1 of your understanding of the cause of the incident in number seven or number eight?
A. No. I did not review the cause of any of these.
Q. But you don't identify the cause of seven or eight anywhere in Exhibit 1; is that right?
A. That's correct. For all of these, it's the fact that the RCP field failure occurred is what I discussed.
Q. Number nine, Xenia, Iowa, 2008, 20 inch DR 18, 1,100 foot crack you say; is that right?
A. Yes.
Q. What, if anything, did you do to verify those facts?
A. I believe the information is on the photograph that was sent to me.
Q. Was that the only document that you received was the photograph that we'll get to in a little bit?
A. No. There was another one that I saw.
Q. Another what?
A. Another document, sorry.
Q. Was it a report? Was it a photograph?

Was it --
A. It may have been a report. I don't remember now.
Q. Newspaper article?
A. I don't recall. Some of these were quite a while ago. I just don't remember.
Q. Did you ever determine the cause of the incident at Xenia, Iowa?
A. No.
Q. Ten is Tampa, Florida, an incident in 2009, eight inch DR 25, 200 feet. What, if anything, did you do to verify those facts.
A. I reviewed documents that were sent to me.
Q. Where did you get those documents?
A. I don't recall.
Q. Did -- for any of these first 10, did you get the documents from Performance Pipe?
A. Some I obtained from Performance Pipe. Some I obtained from Bruce Partington. Some I obtained from the utility or the contractor because they provided me phone numbers.
Q. I'm sorry, who was that second, Bruce Partington?
A. I'm sorry.

Q. Papenhause?
A. Papenhause. Bruce Partington is a colleague of mine in Canada. Yeah, Bruce Papenhause, sorry.
Q. And for the ones that came from Performance Pipe, would that be Wes Long?
A. It could have been Wes Long or Paul Drayer or Karen or anybody from Performance Pipe that it may have come from. There are a number of people that were gathering information.
Q. Did you have any meetings with any of those people at Performance Pipe or Bruce Papenhause regarding ongoing efforts to collect information regarding these long-running crack incidents?
A. No, never had any meeting or anything of that nature.
Q. How about correspondence, did you ever correspond back and forth with them to the effect that we should continue to canvas the industry to find any incidents involving fusible PVC pipe in long-running cracks?
A. There are many times that either Bruce would send me information or somebody from Performance Pipe would send it to me or somebody from ISCO would send it to me.

So various people knew that I was gathering information on RCP incidents in PVC pipe, and when these incidents would occur or information about the incidents was available, they would send the information to me.
Q. Did you also receive information regarding HDPE failures from Performance Pipe?
A. Well, I helped them with some failures that had occurred in their system with their direct customers, yeah.
Q. How about the alliance for -- the PE Alliance, did you ever receive reports from the PE Alliance involving HDPE failures?
A. Not that I recall.
Q. So you weren't actively gathering information regarding HDPE failures in order to continue to advise potential customers to improve the perception of plastic pipe?
MR. FITZPATRICK: Objection to form.
BY MR. SHEEAN:
Q. Is that right?
A. Yeah. The paper that I wrote or presentations that I gave were primarily for the RCP failures that were occurring in butt fused PVC pipe. There were RCP failures occurring in polyethylene.

Q. Are you -- do you consider yourself sufficiently knowledgeable to be able to investigate and render an opinion about HDPE failures?
A. Which type of failures are you referring to?
Q. Any type.
A. Yes.
Q. But you have chosen to focus on the PVC related RCP failures; is that right?
MR. FITZPATRICK: Objection to form.
THE DEPONENT: When you submitted an abstract to an industry conference meeting and so forth, normally your time is restricted. Your subject matter is restricted. You have to submit an abstract, and the abstract has to clearly state what your specific topic is about.
I could give a five-hour presentation on a lot of the information that I know, but you have to restrict it to -- to certain areas. I have given presentations about RCP and polyethylene about the standards for rapid crack propagation, et cetera.
I've given presentations on RCP in PVC. I've given presentation on failures that have occurred, butt fusion failures that have occurred,

in polyethylene.
So at various organizations or meetings I have given such presentations. This particular one happened to be about RCP in PVC pipe.
BY MR. SHEEAN:
Q. What percentage of your presentations would you say over the last eight years involved PVC pipe?
A. It would be a low number, on the order of maybe 5 or 10 or 15 percent in that --
Q. On PVC?
A. On PVC, yes.
Q. And the rest is on what?
A. On polyethylene, on crosslight polyethylene, on polyamide, on RTP, reinforced thermoplastic pipe.
Q. How come you don't post any of those reports on the Plastics Pipe website because I've been on that website many, many times, and I've never seen anything about HDPE or any of the other forms of plastic pipe other than PVC?
A. It's on my website because I had a number of requests for it when I gave presentations, and so I thought the simplest thing would be just to put it on the website.

Q. So people aren't interested in HDPE failures?
A. Well, I didn't have any requests to put it on there.
Q. Okay. When is the last time you gave a presentation on an HDPE failure?
A. You mean other than the HDPE failure that I had discussed in the presentation at Florida AWWA? That would have been in December of 2013.
Q. Okay. Was that in conjunction with the presentation that we have here?
A. Yes.
Q. And that presentation is primarily about PVC pipe, isn't it?
A. Yes, but I do show a failure in polyethylene.
Q. Okay. When is the last time you gave a presentation that focused exclusively on HDPE failures?
A. Probably 2000 -- or 2013, I believe, I gave a presentation on polyethylene failures in the gas industry.
Q. To whom did you give that presentation?
A. The American Gas Association.
Q. When was that meeting? What month?

A. The operations conference is usually in May.
Q. Where was it?
A. That I don't remember.
Q. It used to always be in Canada.
A. No, it's usually not in Canada. It's usually in the US.
Q. What was the title of that presentation?
A. That had to do with pipe failures in the gas industry.
Q. Other than that presentation at AGA in May of 2013, when was the -- the next most recent time you gave a presentation on HDPE?
A. I'd have to look. I give a lot of presentations. I just don't remember offhand.
Q. What was the last presentation you gave?
A. The last presentation I gave was at the AGA Plastic Materials Committee meeting about two weeks ago in Amelia Island, Plantation in Florida.
Q. What was your presentation?
A. PE 100 RC.
Q. All right. With respect to incident 11 and 12 on page three of Exhibit 1, Baton Rouge, Louisiana, what, if anything, did you do to verify the facts listed on those incidents?

A. Reports that I received. And I don't remember who I talked to, but a gentleman with the water company who provided me with photographs of the failures.
Q. How did you get in contact with the gentleman from the water company?
A. It was either somebody from ISCO or somebody from Performance Pipe that provided me the contact information.
Q. What is ISCO?
A. ISCO is a distributor of plastic pipe.
Q. What kind of plastic pipe?
A. Primarily polyethylene. I don't know if they distribute other -- I think they may distribute other types of plastic also. They're a very large distributor.
Q. Do they distribute PVC?
A. I don't know for sure if they do or not.
Q. Do they distribute fusible PVC?
A. No.
Q. Are they a member of the PE Alliance?
A. I don't think distributors are. I think it's resin manufacturers and pipe manufacturers.
Q. Anything else that you did to confirm the facts listed for 11 and 12?

A. No.
Q. Did you -- were you able to determine the cause of the first Baton Rouge incident, the 300-foot crack?
A. I think I knew at one time. And I saw the photos and talked to the person there, but I -- right now I don't recall who it was.
Q. Is that the same for --
A. For both.
Q. -- the second one? Okay. Exhibit 1 does not identify anywhere for the reader the cause of the two incidents in Baton Rouge, Louisiana, does it?
A. It does not.
Q. Now, number 13 is a -- the next Collier County, Florida incident. It's from 2010, 30 inch DR 25 and an RCP crack of 750 is listed. Do you see that?
A. Yes.
Q. What, if anything, did you do to verify those facts?
A. That's a case that I was actually involved in, and also a lot of the information was in the Malcolm Pirnie report.
Q. How were you involved in that case?
A. As an expert witness initially for Hazen and Sawyer and then also a witness on behalf of

Reynolds.
Q. Who was Reynolds?
A. The contractor.
Q. Did you develop a -- strike that. Anything other than the materials you received as an expert provide you with information that you listed for incident number 13?
A. All the information you need to know is in the Malcolm Pirnie report.
Q. How did Malcolm Pirnie verify the length of that crack?
A. I don't know how they verified it. It was in the report.
Q. Did the report make any sort of a conclusion as to the cause of the incident?
A. Yes.
Q. What was the cause?
A. The report claimed that the cause of the incident was a rock impingement failure.
Q. Did you agree with that conclusion?
MR. FITZPATRICK: Objection to form.
THE DEPONENT: This was an in-service failure that occurred after -- I don't remember, a year or two years in service. In PVC pipe there have been hundreds, thousands of rock impingement

failures in ball-and-spigot PVC.
So rock impingement failures are a very common motor failure in the PVC pipe. The fact that this one failed from rock impingement, they concluded -- I didn't argue with because it's a very common occurrence.
BY MR. SHEEAN:
Q. Did you indicated anywhere in Exhibit 1 that the cause of the Collier County incident was a rock impingement?
A. No, I did not.
Q. You have said a couple of times today there have been hundreds of thousands of rock impingement failures in PVC pipe, particularly in the bell and spigot variety. What is the basis for that statement?
A. Just talking to people. I mean, it's well-known that there's been so many of them.
Q. Is there any recognized authority that gathers and catalogues that information?
A. Not really because so many times, you know, a water company has a rock impingement failure in PVC pipe, and the crack runs 75 feet. They just go in there and repair it, and they're done.
It's not really reported all the time,

but in -- in discussions that I've had with numerous people we know that they happened a lot. Many of them occur all the time.
Q. So your statement that there are hundreds of thousands --
A. Hundreds or thousands.
Q. Oh, I'm sorry. Hundreds or thousands?
A. Hundreds or thousands. Yeah, I'm sorry, I didn't say hundreds of thousands, but, you know, it's several hundred or, you know, a couple, two, 3,000. You know, it's a high number, whatever it is.
Q. That's based exclusively on anecdotal reports?
A. Yes. Yeah, just talking to water companies. I mean, I'm -- I was personally involved with a water company in -- what I mentioned earlier, the one in Mexico, that they had 15 rock impingement failures in a one-year period. There was a company in Tennessee that contacted me that had like 20 or 30 rocks impingement failures.
The paper by Fran Shulton that was presented at a plastics pipe conference mentioned they had -- what was the number he said? It was several rock impingement failures in the last few years in the Netherlands. So it's, you know, all over. Rock

impingement failures are common in PVC pipe. That occurs.
Q. How many specific incidents have you been involved in where you personally inspected pipe that was damaged by rock impingement?
A. If you're including polyethylene in that question, then my answer would be like several.
Q. Okay. Well, let's -- let's start -- let me limit it then to how many inspections of PVC pipe that was damaged and resulted in an RCP of PVC pipe have you been involved in?
A. Well, the water company I mentioned in Mexico, they had 15.
Q. Did you inspect all 15?
A. The photographs of them.
Q. Okay. So you never actually personally went out and --
A. No, I did not. I chose not to fly to Mexico to personally inspect them. I had somebody else do that.
Q. Who did you have do that?
A. Dwayne Priddy.
Q. Who is Dwayne Priddy?
A. He's a colleague of mine who has a laboratory. He agreed to fly out there and inspect

them and wrote a report. That's P-r-i-d-d-y.
Q. Any other incidents that you were able to personally witness of PVC rock impingement RCP failures?
A. Not personally witness. I've talked to people about them. They've told me about them, but I have not personally witnessed any of them.
Q. Okay. And then you said you've personally been involved in several PE rock impingement investigations as well?
A. Yes.
Q. Okay. How many of those?
A. Hundreds.
Q. Hundreds? So rock impingement is a fact in plastic pipe failure across the board?
A. Yes.
Q. Number 14 is Chatham, Illinois. What, if anything, did you do to verify the facts listed for incident number 14?
A. There were some documents for all of these, also a number of discussions with the contractor that installed the pipe, I believe something like EBI Drilling, something like that.
This was the contractor that was directly involved in the -- the installation, and he told me

exactly what went on, what occurred.
Q. Did you interview anyone else in conjunction with that incident?
A. No, just the contractor that was directly involved.
Q. And what did he tell you?
A. He told me about the three attempts that he personally had in trying to install the fusible PVC horizontal directional drill application.
Q. Based on your discussions with the driller, the contractor, did you reach any conclusions as to the cause of that incident?
A. Yes. The cause of the incident was the leak pressure test. It was held at a -- I have it right here some place. It was held at a certain pressure. There it is.
At 60 psig they were intending to do the leak pressure test. I think they were planning to go up to 150 psig. And when the pressure reached about 100 psig, the RCP failure occurred, and the crack ran 800 feet.
Q. Did you discover anything in discussing this with the contractor about difficulties that he had with the horizontal drilling in terms of the nature of the existing broken pipe that he was trying to feed the

new pipe into?
A. I recall he mentioned it was -- it was difficult. They did it the first time, and then it failed. He told me they tried it a second time, and it failed. It cracked. He tried it a third time, and it cracked and then -- and then they eventually used polyethylene pipe.
Q. Why didn't you try to discuss the incident with any of the other entities that were involved to get their side of the story?
A. Because the contractor was right on site and was right there when it happened.
Q. Doesn't he have a vested interest to tell his side of the story and spin the facts to his benefit?
MR. FITZPATRICK: Objection. Foundation, form.
THE DEPONENT: I mean, I found most contractors to be reliable. They're right there on the job site, and they know exactly what happened.
BY MR. SHEEAN:
Q. Did you ever become aware of any reports that contradicted your findings regarding the Chatham situation?

A. No, I'm not aware of any.
Q. You didn't personally inspect the pipe involved in Chatham, right?
A. No. I saw photographs that they sent me, and I had the discussions with the contractor.
Q. I asked you what the cause of the failure was of Chatham, and you said it failed during the leak test. But you didn't really identify what caused the pipe to crack. Do you have any knowledge, as you sit here today, what caused the pipe to crack?
A. I don't know what caused the initiation of it.
Q. And you don't list in here on either page UGSI00704 or the third page of the exhibit, 00679, that you were unable to determine the cause of the initiation of the crack, do you?
A. No, just -- I just mentioned it occurred during the leak pressure test.
Q. The next incident, number 15, is Fremont, California, 2011, allegedly a 2,000 foot crack. What, if anything, did you do to verify the facts there?
A. My recollection is this is information I obtained from Bruce Papenhause, who was there in California and obtained the information.
Q. Who's Bruce Papenhause?

A. Bruce Papenhause is the owner of P&F Distributors.
Q. P&F Distributors is the same company that was involved in a lawsuit in 2012 -- 2011 and 2012 with UGSI, right?
A. That's correct.
Q. Okay. Besides speaking with Mr. Papenhause regarding the incident, what else did you do to verify the facts?
A. Just the -- the e-mails that I had with him. They're going out and gathering the information and providing me the information.
Q. So that's all still Mr. Papenhause?
A. Yes.
Q. Did you speak with anyone besides Mr. Papenhause regarding the incident?
A. No. This particular one I forget the reason, but it was a very sensitive situation. And so not many people were talking about it.
Q. Okay.
A. I don't recall why at this time.
Q. Did you ever develop an understanding as to the cause of the Fremont incident?
A. No.
Q. And nowhere in Exhibit 1 do you indicate

that you have no knowledge of the cause of the initiation of that crack, correct?
A. Correct.
Q. Number 16, Green Bay, Wisconsin, where did you obtain the facts that you identify for the Green Bay, Wisconsin incident?
A. For that one, I believe it was information provided to me by Performance Pipe, and then eventually there were -- a report or some kind of document that I reviewed where I got the information about the 300 feet.
Q. Do you recall what document you received?
A. No, just a report, I think, about it.
Q. Do you recall who the author of the report was?
A. No, I don't.
Q. Any other information that you received regarding Green Bay, Wisconsin?
A. No.
Q. Were you ever able to independently verify the length of the crack for Green Bay, Wisconsin?
A. No.
Q. Were you ever able to reach a conclusion in your mind as to the initiating cause of that crack?

A. I don't recall for that one.
Q. 17 and 18, Salt Lake City, Utah, are two incidents, a 350-foot incident and 3,300-foot incident; is that correct?
A. That's correct.
Q. Are these the incidents involving the Jordan Valley Water Conservation District?
A. They are.
Q. What, if anything, have you reviewed to learn the facts listed on pages -- I'm sorry, incidents 17 and 18?
A. Initially it was information provided to me by Jason Bennie. I think it's B-e-n-n-i-e, with COP, all capital letters, Construction. He contacted me directly after the first failure.
According to Jason, the first failure occurred during a leak pressure test. The 350 feet number came to me from Jason, and he also sent me photographs of it.
Subsequent to that failure, there were -- they experienced another -- Jason called me to tell me that they experienced another RCP failure during a pigging operation, and the number 3,300 feet, that number came from Jason. They -- he was a contractor.

Subsequent to those conversations, he put me in touch with the lawyers representing COP, which are Babcock & Babcock. Subsequent to that, I've been in touch with the -- the law firm representing Jordan Valley. And I've had discussions with them, but that would be privileged. So I can't get into what those discussions were about.
Q. Have you been disclosed as an expert in that case?
A. I don't know if they have disclosed me or not. I don't know. You'd have to ask other people. I don't know if they disclosed me. I would assume so, but I don't know. I'm supposed to write a -- or an expert report. So I imagine I have been.
Q. Are you familiar with any of the problems that were experienced on phase one of the Jordan Valley Byproduct Pipeline?
A. What do you mean by "phase one"? Obviously, the first phase, I guess --
Q. There's -- there was a predecessor project involving PE pipe that was named the Jordan Valley Byproduct or Bypass Line.
MR. SHEEAN: Is it Byproduct?
MR. STANCZAK: Byproduct.
BY MR. SHEEAN:

Q. Byproduct Pipeline. Are you familiar with that at all?
A. No.
Q. Okay. Are you aware that there were multiple coupled fusion failures during pressure testing?
A. In the PVC pipe?
Q. In the PE pipe, sir. I'm talking about the byproduct of the pipeline.
A. I'm not sure of that.
Q. Okay. Does the fact that that occurred in the coupled fusion joints cause you concern regarding coupled fusions in HDPE?
MR. FITZPATRICK: Objection to form. Assumes facts.
THE DEPONENT: Could you explain to me what you mean "coupled fusion"? Are you talking about socket couplings? Are you talking -- no, this is large diameter.
Are you talking about mechanical couplings? I'm not sure what you mean by "coupled fusion". You said coupled fusions or --
BY MR. SHEEAN:
Q. Coupled fusions.
A. I'm not sure what you mean by the term

"coupled fusion".
Q. Okay. We'll come back to it. Have you reached any conclusions as to the cause of the first incident in Salt Lake City, Utah, the 350 foot?
A. My understanding is that occurred during a leak pressure test.
Q. What was the initiating cause of the crack?
A. I -- I don't know yet.
Q. Okay. And with respect to --
MR. FITZPATRICK: I designate those last two questions as confidential limited to this litigation.
BY MR. SHEEAN:
Q. With respect to the second incident listed on line number 18, have you developed an understanding -- well, let me stop with that. Let me back up for a second.
When you prepared this exhibit in March of 2013, did you have an understanding of the cause of the first Jordan Valley incident?
A. Yes. Jason Bennie had -- well, he told me it was -- occurred during a leak pressure test. The actual cause why it initiated and propagated I don't know, but it occurred duration a leak pressure test.

Q. And as of March 2013 when you presented this, did you have an understanding of the cause of the 3,300 foot crack, the initiating cause?
A. Again, it was information that Jason gave me that occurred during the pigging operation to clean the line, but what caused it to initiate, we had some discussion that it may have been due to the debeading process that was used on the inside. But I don't think at that time it was concluded exactly what the cause was.
Q. Have you -- okay. At that time did you have an understanding of the amount of air that was in the pipeline during the attempted pigging operation?
A. I knew that there was some air. I don't know if they knew what the exact quantity or percentage.
Q. Do you know whether or not there was any deviation by the operator from the manufacturer's specifications in running a pigging operation on fusible PVC pipe when that incident occurred?
A. I don't recall.
Q. Did you -- strike that. Do you identify anywhere in Exhibit 1 the fact that you don't understand the cause -- you don't know the cause of incidents 17 and 18 as of the time you prepared this

exhibit?
A. No.
Q. Number 19 is Dorchester County, South Carolina. What, if anything, did you do to verify the information there as of March 2013?
A. For this particular one, I was contacted directly by the contractor, WH something. I forget the name. I should remember that. I don't remember. I don't remember the name. I'm sorry.
Q. Okay.
MR. FITZPATRICK: I'm going to designate this question and answer and all further testimony regarding Dorchester County as confidential.
BY MR. SHEEAN:
Q. Is this your first -- strike that. Is that when you first heard any information regarding the Dorchester County incident?
A. I believe I had heard from someone about, "Hey, there's a long crack that occurred in South Carolina." I didn't know any of the details, and then -- then they contacted -- Moore, I think H. Moore or something like that I believe is the name.
Q. Who -- did you reach out to them first or did they --
A. They reached out to me.

Q. How did they get your name?
MR. FITZPATRICK: Objection. Foundation.
THE DEPONENT: I don't know. You'd have to ask them.
THE VIDEOGRAPHER: Sir, I've got about five minutes left on the DVD, just a heads up.
MR. SHEEAN: I'll try to make the most of it.
BY MR. SHEEAN:
Q. Had -- at the time that you prepared this incident, did you have an understanding of the cause of the initiating crack for Dorchester County?
A. It occurred during a leak pressure test, as I stated over here.
Q. Yeah.
A. It was held at a pressure of 90 psig for a while.
Q. What caused the crack?
A. The -- the pressure test caused the crack to initiate and propagate.
Q. Was there any other -- I mean -- strike that. Previously you testified that it's your understanding that there's -- even in a leak pressure test there's something that triggers the crack to start?

A. Yes. Something initiated it, yeah.
Q. Do you know what that is?
A. I don't know if anybody knows what that is.
Q. Okay. That's all -- that's what I wanted to know.
A. Okay. Thank you.
Q. Do you indicate anywhere in Exhibit 1 that you don't know what initiated the crack in Dorchester County, South Carolina?
A. On Exhibit 1 I mentioned that it occurred when the leak pressure was increased for the leak pressure test, but not what specifically caused the initiation.
Q. The last one is Watford City, North Dakota.
MR. FITZPATRICK: Cease the designation confidential.
BY MR. SHEEAN:
Q. What, if anything, did you do to discover the facts regarding Watford City, North Dakota?
A. On this one I was contacted by the contractor on site. His name is Rick Zirk, I believe, Z-i-r-k. He -- he got my name from EBI Drilling. He -- I don't remember if he called me or e-mailed me,

but, at any rate, he contacted me, gave me the details of the failure, when it occurred, the pipe size, the DR and the length of the crack.
Q. What, if anything, did you do to verify the information that Mr. Zirk provided?
A. It was primarily the information that he gave me, and then he also provided me with a report that a laboratory had conducted.
Q. Do you recall the name of that laboratory?
A. I do not.
Q. Did you have an understanding of what the cause of the initiating crack for that event was?
MR. FITZPATRICK: Objection to form.
THE DEPONENT: My recollection is it had something to do with bending stress.
BY MR. SHEEAN:
Q. Do you inform the reader anywhere in Exhibit 1 that your understanding of the cause of the incident in number 20, Watford City, North Dakota, was a bending incident?
A. No.
MR. SHEEAN: We can go off.
THE VIDEOGRAPHER: Time is 12:48. We're going off the record.

(The deposition was in recess.)
THE VIDEOGRAPHER: The time is 1:37. We're back on the record.
BY MR. SHEEAN:
Q. Mr. Palermo, in reference to the investigation -- I'm sorry, in reference to the incidents that we were discussing on page three of Exhibit 1, when you investigate an event that you include in your presentations, do you maintain any records that confirm the source of your information?
A. I probably had some notes. Some were by e-mail. So I probably have copies of those. A lot of them were quite a while ago. I may not have those anymore.
Q. Do you keep records of what actions you took to corroborate the facts that are discussed in your report -- or in your presentation?
A. No.
Q. Did you produce to -- in this litigation any records that you have remaining regarding your confirmation of the information that's displayed in your presentations?
A. The e-mails that I still had, I believe I did produce those.
Q. Do you still have any of the notes that

you kept?
A. Probably not, no.
Q. Did you look to see if you had any notes regarding any of these incidents?
A. I mean, they would have been handwritten notes. I probably don't have those. I don't think I do have those.
Q. Did you look for them?
A. I don't even know where I would look for them.
Q. Okay. Do you agree that the information you provide in your presentations may effect -- may effect adversely the purchasing decisions of potential customers of fusible PVC pipe?
MR. FITZPATRICK: Objection. Form, foundation.
THE DEPONENT: What I'm hoping for in my presentation is that when people purchase fusible PVC, they will be made aware of the fact that RCP failures are possible, and they can be proactive and take actions to prevent those RCP failures from occurring.
My intention isn't so much that they not purchase it, but when they do purchase it, that they be made aware of it. In fact, that's -- one

of my recommendations is how to design so that the RCP failures won't occur.
BY MR. SHEEAN:
Q. Let's talk about your recommendations.
A. Okay. I don't have page numbers on here.
Q. It's -- it's 32 and 33.
A. But I don't have page numbers.
Q. I understand. I understand. So before --
A. Oh, here we go. This one.
Q. It's before you get to the butt fusion.
A. The following requirements? There we go.
Q. No, it's before that because you're in the butt fusion recommendations. You need to be in the RCP --
A. This is the RCP.
Q. Oh, yeah, you're right. You're right. Okay. Sorry. Yeah, so that page and the next page.
A. Yes.
MR. FITZPATRICK: What's the bates reference?
MR. SHEEAN: It's 708 and 709.
BY MR. SHEEAN:
Q. On the second page of those recommendations, you say, "The following requirements

should be added to the industry standards for butt fused PVC pipe:
The PVC pipe internal pressure during both operation and leak pressure testing shall be maintained below the PVC pipe full-scale RCP critical pressure." Do you see that?
A. Yes.
Q. That's one of your recommendations?
A. Yeah. My first recommendation is that the testing be done to determine what the critical pressure is, and then in order to prevent an RCP failure from occurring, then the operator, the user, should keep the pressure below that critical pressure point.
Q. Now, with respect to the last recommendation, you say, "In the event that PVC pipe RCP critical pressure data are not available, then the DR of the butt fused PVC pipe shall be DR 13 or lower - e.g. DR 11 or DR9." Is that right?
A. Yes.
Q. Are you aware of any commercially available fusible PVC pipe that's DR 13 or lower?
A. I don't know all the DR sizes. There may, but this -- this DR number or this recommendation actually is the -- a recommendation from Dr. Pat

Leevers.
Q. That's not my question, sir. Are you aware --
A. No, I know not.
Q. Do you know of any installation that exists in North America of fusible PVC pipe where DR 13 or lower was used?
A. I'm not aware.
Q. Okay. Do you know if it's economically feasible to manufacture and sell fusible PVC pipe DR 13 or lower?
MR. FITZPATRICK: Objection. Form, foundation.
THE DEPONENT: I have no knowledge at all about the economics of manufacturing PVC pipe.
BY MR. SHEEAN:
Q. Did you make these recommendations part of a recommendation to the AWWA to modify C900 involving fusible PVC pipe?
A. Yes. I believe it was initially C605, and then I believe I also recommended it for C900.
Q. And what was the result of those recommendations with the AWWA?
A. It was not accepted.
Q. The vote was 17 to 2; is that right?

A. Vote?
Q. The vote on the recommendations for the --
A. Oh, you're talking about the conference call. Is that what you're talking about?
Q. I'm talking about the vote.
A. Yeah, the vote was taken during a -- it was an informal vote during a conference call.
Q. Okay. And of the two people that voted in favor of your recommendations, you were one of them, right?
A. Yes, I was.
Q. So given the fact that you're not aware of any DR 13 or lower being commercially available for fusible PVC pipe, isn't it, in fact, true that your recommendation is essentially that purchasers of water pressure pipe purchase PE pipe and not fusible PVC pipe?
MR. FITZPATRICK: Objection. Form, argumentative.
THE DEPONENT: No, that's not what I'm saying at all.
BY MR. SHEEAN:
Q. Okay. What PVC pipe -- strike that. We've already established that DR 13 or lower is not

commercially available. So, therefore, what fusible --
A. Excuse me, we didn't establish that. I said I didn't know. It could -- that means it could be available. I just don't know.
Q. Okay. Assuming for purposes of this next question that fusible PVC pipe is not commercially available at DR 13 or lower, what other option does a potential customer for water-filled pressure pipe have based on your recommendations other than to purchase high-density polyethylene pipe?
A. To request the pipe manufacturer to make that DR.
Q. Regardless of the cost?
A. Well, if it helps -- if that increase in cost is significantly less than the cost to replace 2,000 feet of the fusible PVC, then, yes, that's an economically wise decision by the water company.
Q. Even if the -- strike that. Are you aware of the changes in the utility of fusible PVC pipe when it's made at DR 13 or lower?
A. I'm not sure what you mean by "the utility".
Q. I'm talking about the band radius of DR 13 or lower fusible PVC pipe.

A. No, I'm not familiar with that.
Q. Okay. What about the weight of DR 13 or lower of fusible PVC pipe, would it be impacted as compared to --
A. -- certainly, a thicker wall.
Q. So would it then be more cumbersome to work with for the contractors?
A. It might be during the installation, but, again, these are things that a water company needs to weigh. A water like Jordan Valley I'm sure had to spend a lot of money to replace 3,000 feet of pipe.
It might be more economically prudent for the water company to -- to specify a thicker wall pipe, make sure they don't have RCP failures and make sure they don't have to go replace it all.
Q. But if that pipe is not commercially available, then they're requesting something that doesn't exist, right?
A. Well, maybe it should be commercially available.
Q. But it's -- but you've established that you're not aware --
A. I said I don't know. I don't know if they're making it or not. It's certainly feasible.
Q. But you have no basis for the statement

that it's economically feasible; is that right?
A. Well --
MR. FITZPATRICK: Objection. Form.
THE DEPONENT: Yeah, I didn't make the recommendation based on the economic feasibility. I made the recommendation based on a technical recommendation, which comes directly from the research that Dr. Pat Leevers did.
BY MR. SHEEAN:
Q. Well, we're going to get to Dr. Leevers' research in just a moment. Turn back to the fourth page of Exhibit 1 -- actually, the fifth page, sorry, Jackson County. Where did you get this photograph from?
A. I don't remember.
Q. Does this photograph actually show a 600-foot crack?
A. No, this itself is not a 600-foot crack. It's hard to tell actually how long it goes, but --
Q. You can't tell from the photo?
A. Yeah, how long --
Q. Right. On the seventh slide, the Xenia, Iowa slide, where did you get this photograph from?
A. I believe I've seen this photograph a number of times. The very, very first time that I saw

it it came from Wayne Coral.
Q. Who is Wayne Coral?
A. Wayne Coral at that time worked for a piping manufacturer known as Polytubes in Canada.
Q. Can you tell from the photograph whether or not the RCP crack is 1,100 feet long?
A. It's obviously not a close-up picture of the crack.
Q. The next page, Baton Rouge, Louisiana, where did you get the picture from?
A. From the water company in Baton Rouge. They e-mailed it to me.
Q. And how did you get in contact with that company?
A. I was provided the information by -- I'm not sure. It either would have been Bruce Papenhause or Wes Long. And I contacted them and asked them for photographs of their failures, and they sent me a number of photographs. This happens to be one of them. I selected this one because to shows the crack going through a butt fusion.
Q. Does this show 850 feet of cracked pipe?
A. Obviously not.
Q. Okay. How were you able to conclude that it was 850 feet?

A. They confirmed it for me.
Q. Do you know whether or not this pipe was under pressure at the time of the crack?
A. I do not know that.
Q. Would that matter, for purposes of your analysis, as to whether or not it was an RCP event?
A. No. As I stated before, a rapid crack propagation is simply a crack that propagates rapidly and has enough energy to drive the crack. That energy can come from pressure or it could come from bending stresses or other forms of stresses.
Q. Turn to the Dorchester County 2,200 foot RCP slide, which is 687. This says that it's a 2,200 foot crack. Obviously there's -- this is not a picture of 2,200 feet of crack, right?
A. Obviously not. This is one of the photographs that RH Moore, I believe, the contractor, sent to me, and this was taken from an internal camera that went inside the pipe. There are a number of them. I just happened to pick this one.
Q. How far was the internal -- the camera able to determine that the crack had run?
A. I believe -- on the one end I believe they went a distance of around 400 and something feet. And then it was underwater, and it was not practical to

go any farther. And I seem to recall they also either went in or attempted to go in on the other end, but I don't recall how far that was.
Q. Do you believe it's potentially misleading to list a 2,200 foot crack for this project when you were unable to verify that the crack was, in fact, 2,200 feet?
MR. FITZPATRICK: Objection. Form.
THE DEPONENT: At the time I gave the presentation, the information I was given was that the crack was 2,200 feet. That was the belief at the time.
BY MR. SHEEAN:
Q. Have you corrected that information since?
MR. FITZPATRICK: Same, form.
THE DEPONENT: I have not given any presentations or distributed articles to anyone in the last couple of years. So, no.
BY MR. SHEEAN:
Q. Did you ever come to learn that a portion of the pipe in Dorchester County was damaged by a bullet hole prior to installation?
A. Yes, I'm aware of the pipe that had a bullet hole, and it was documented in the reports that

I read that that was a totally separate section of the pipeline. It had absolutely nothing to do with the section of the pipe that had the long-running crack.
Q. Were you able to independently verify that there were no bullet holes in any portion of the pipe that was damaged during the RCP event?
A. The only bullet holes that I'm aware of in the several documents that I read with Dorchester County all indicated that the bullet holes were in a totally separation section of the pipeline.
Q. Were you able to independently verify that there were no bullet holes in any of the section that you had referenced as a 2,200 foot RCP crack?
A. The documents that I reviewed said nothing about a bullet hole in this particular section of pipeline.
Q. Were you able to verify that there was no bullet hole in any of the 2,200 foot section that you allege had an RCP crack in it?
A. I verified that the documents stated that there were no bullet holes in this section.
Q. The documents stated there were no bullet holes in this section?
A. There were documents that I read that talked about the two sections of pipe, and the one

document I remember reading very clearly said the bullet holes were in a separate section of pipe. There were no bullet holes in this section of pipe.

Q. Did you personally inspect the pipe to determine whether or not there were bullet holes in the other section?

A. No.

Q. Do you know whether or not RH Moore or anyone for RH Moore conducted an investigation to confirm that none of that other span of 2,200 feet of pipe had any bullet holes in it?

A. Only the document that I read which specifically talked about the two sections of pipe. And it mentioned there were bullet holes in the one section of pipe, and it didn't say whatever was observed. They didn't talk about any bullet holes in this section of the pipe.

Q. Would you agree to a potential customer of water pressurized -- or pressure pipe for water distribution that a chart showing a 2,200 foot RCP crack is far more alarming than a chart showing a 450-foot crack?

MR. FITZPATRICK: Objection to foundation.

THE DEPONENT: It all has to do with cost

to repair. It's pretty expensive to repair 400 feet, but it certainly would be more expensive to repair 2,000 feet.

BY MR. SHEEAN:

Q. So it would be alarming to the potential customer?

MR. FITZPATRICK: Same, foundation.

THE DEPONENT: It depends on your definition of "alarm".

BY MR. SHEEAN:

Q. Well, 450 versus 2,200?

A. Yeah, it's more costly, right.

Q. On your slide that starts with Salt Lake City, Utah, at the bottom you say, "They will replace all 13 miles of fused PVC pipe." Do you see that?

A. Yes.

Q. Is there, in fact, 13 miles of pipe being replaced in Jordan Valley?

A. I don't know how many miles were actually replaced. My understanding in talking with COP Construction was I think they were looking initially at 13 miles. I don't know for sure how many miles were replaced.

Q. Did you ever correct that statement or advise the people who reviewed this document that it

wasn't 13 miles of fused PVC pipe that were replaced?

MR. FITZPATRICK: Objection to form. Assumes facts.

THE DEPONENT: I don't know for a fact that it wasn't 13 miles.

BY MR. SHEEAN:

Q. Have you done anything independently to verify the actual length of pipe that was replaced?

A. Well, like I said, I haven't done anything in giving presentations or anything for the last two years. So there was no need for me to.

Q. If you assume -- well, strike that. Do you know how many people downloaded this document from the website?

A. I have no idea.

Q. Do you know how many people saw the presentation when you gave it?

A. I -- I would estimate there might have been 40 or 50 people in the audience, something like that.

Q. Have you used this slide in any other presentations?

A. Very likely I did, yeah. Previous ones, yeah.

Q. Do you have any estimate --

A. This is one of the last ones that I gave, 2013, yeah.

Q. Do you have any estimate as to how many people would have seen this slide regarding Salt Lake City, Utah?

A. Well, certainly people at the presentation.

Q. And anybody who looked at it --

A. And then --

Q. -- on the web?

A. Yes.

Q. And any other presentations where you used this slide?

A. Yes.

Q. If Jordan Valley only replaced six and a half miles of fused PVC pipe and not 13 miles of pipe, don't you think that exaggeration by a factor of two is misleading to a potential customer?

MR. FITZPATRICK: Objection. Form. Misconstrues the document.

THE DEPONENT: I mean, seven miles, 13 miles, it's still a lot of pipe to be replacing.

BY MR. SHEEAN:

Q. It's double the cost, isn't it, to replace 13 miles instead of six and a half miles?

A. It's still a significant number.
Q. But wouldn't you find that to be a misleading exaggeration?
MR. FITZPATRICK: Objection. Form.
THE DEPONENT: With the word "misleading", if you're saying "misleading", it's almost like you're doing it on purpose, and I certainty didn't do it on purpose.
When I gave this presentation, when I wrote down the 13 miles, that's what I understood to be the number of miles that were going to be replaced.
BY MR. SHEEAN:
Q. Since you wrote this down, you've done nothing to verify whether or not there were, in fact, 13 miles of fused PVC pipe replaced, correct?
A. That's correct.
Q. Do you believe that you have an obligation to be truthful in these presentations when you present them to potential customers of pressurized pipe?
A. I believe that I have been truthful with the information that has been provided to me and the information that I have gathered from researching and reading the various documents.

Q. And you agree that it's important to be truthful in these presentations?
A. Absolutely.
Q. And in order to be truthful, you should take whatever steps are necessary to verify the accuracy of the information you're providing to these potential customers, right?
MR. FITZPATRICK: Objection. Form.
THE DEPONENT: When I put the information down, in my opinion, to my knowledge, it was accurate.
BY MR. SHEEAN:
Q. And you would agree with me that you should take whatever steps are necessary to verify the accuracy of the statements in this presentation in order to make sure that they are accurate, right?
MR. FITZPATRICK: The same, form.
THE DEPONENT: And at the time I put this together I believe that was accurate.
BY MR. SHEEAN:
Q. That's not my -- that's not my question. My question is: Would you agree with me that as a presenter to potential customers of pressurized pipe, it was imperative that you take whatever steps are necessary to ensure the accuracy of the statements in

this document?
MR. FITZPATRICK: Objection to form.
THE DEPONENT: And when I put the document together, I did --
BY MR. SHEEAN:
Q. That's not what I'm asking you. I'm not asking you if you thought you did it. I'm asking you if you agree that you had an obligation to make sure that what you were telling these potential customers was accurate?
MR. FITZPATRICK: Objection to form.
THE DEPONENT: I believe I had --
BY MR. SHEEAN:
Q. I'm not asking what you did. I'm asking you --
MR. FITZPATRICK: Can he finish his answer?
MR. SHEEAN: No, because he's --
MR. FITZPATRICK: He's saying -- he said, "I believe," and you cut him off.
MR. SHEEAN: Yeah.
MR. FITZPATRICK: So why don't you let him answer the question. If you give -- if he gives an answer you don't like, then redirect him, ask him another question.

MR. SHEEAN: That's what I'm doing.
MR. FITZPATRICK: You're cutting him off in the middle of his answer, and then you're complaining about the --
MR. SHEEAN: When we have to bring this witness back for more -- for more time at deposition --
MR. FITZPATRICK: Because you asked the same question 25 --
MR. SHEEAN: Because he won't --
MR. FITZPATRICK: Let him answer the question. "I believe," and then you cut him off; is that fair?
MR. SHEEAN: Let me know the next day that he's available for deposition.
MR. FITZPATRICK: Just let him answer the damn question, and we won't have this problem.
BY MR. SHEEAN:
Q. Dr. Palermo --
MR. FITZPATRICK: No. There's a pending question --
MR. SHEEAN: I'll ask --
MR. FITZPATRICK: -- and he's answering it.
MR. SHEEAN: I withdraw the question.

MR. FITZPATRICK: All right.
MR. SHEEAN: I'm going to ask a new question.
BY MR. SHEEAN:
Q. Dr. Palermo, would you agree with me that as a presenter of information to potential customers of pressurized pipe for water distribution that it was imperative that you make sure that the information that you're conveying to these customers is accurate and truthful?
MR. FITZPATRICK: Objection. Form, compound. Assumes facts.
THE DEPONENT: I believe it's imperative, important, and I believe that I did that.
BY MR. SHEEAN:
Q. Thank you. The slide that has at the top rapid crack propagation, it's 00691. At the bottom it says, "Considerable RCP research has been conducted in Europe on several plastic pipe materials (HDPE, MDPE, PVC, PA11, PA12) to determine the critical pressure." Do you see that?
A. Yes.
Q. Okay. As of March 2013, what considerable RCP research had recently been conducted in Europe?

A. The -- I'm sorry, your question relates to the PVC?
Q. Correct.
A. The research that had been conducted by Dr. Pat Leevers and the work that was going on at KWA on the PVC pipe.
Q. But the work that was done on KWA was not completed until April of 2013, correct?
A. Yeah. The work was going on.
Q. But you didn't have any information based on that -- those studies yet. It hadn't even been complete, let alone released?
MR. FITZPATRICK: Objection to form.
THE DEPONENT: But I was aware it was going on. It had not been published yet, but I knew it was going on.
BY MR. SHEEAN:
Q. So the only published research that you were aware of regarding RCP and PVC pipe was the research that was done by Greenshields and Leevers, correct?
A. Well, your question is published report, but that's not what I'm saying here.
Q. I understand. I asked you a different question.

A. Okay. So for your question what was published, the only thing that was published, that I'm aware of, was the work by Dr. Leevers.
Q. Thank you.
A. Oh, can I -- can I correct that?
Q. Sure.
A. I just remember speaking to Phillip Von Spraybrook (phonetic), and he also informed me that he had been doing quite a bit of testing and research on PVC pipe at Visitel (phonetic). Sorry, I just remembered that.
Q. But that hadn't been published as of March of 2013, correct?
A. Again, it wasn't published --
Q. Right.
A. -- because it was work that they did for their client. So they would not be publishing it, but it was -- as I state here, it's research that was done. It was conducted.
Q. All right. Can you turn to page 20, which is the ISO13477. This is 696. Can you please explain to me -- well, for starters, what are the numbers on the left side of the page on the Y-axis relate to? Is that bar pressure?
A. This is a box in the ISO test method on

the -- the Y-axis is the length of the crack, and the X-axis is the internal pressure of the pipe.
Q. Okay. And then what is the line where it says "A" at the bottom going up vertically signifying?
A. I believe that's signifying the critical pressure.
Q. And what is the -- you're not sure if that's the critical pressure?
A. Well, I'm trying to remember the -- the definition of critical pressure is the highest pressure tested at which -- I can't remember whether you have propagation or arrests.
Basically these are all arrests, and these are propagation. As you can see, there's a very sharp increase, and so the critical pressure is drawn here.
Q. What is the line at the second from the top that says one, the number one with the arrow?
A. I'm not sure.
Q. Okay. How about the second line with the number two and the arrow on the right-hand side of the page? See the number two?
A. Yeah, but I'm not exactly sure what they're drawing there.

Q. Okay. You know what I'm going to ask you next. What's number three?
A. Apparently it's 0.7, whatever that is. Let's see, all of the arrest numbers are above that. This might be the actual length of the crack just from the impingement, and then this is the length of the crack that it -- that it grew, which is just a very short amount and then arrested.
And then the data points up here are the length of the crack at the higher pressures, which went almost the full length of the pipe, essentially the length of the pipe.
Q. So when you gave your presentations and you showed this slide, what would you tell your audience members?
A. Basically this was a plot taken from the ISO test method. It's a plot of the length versus internal pressure. I show them the arrests, what the data points are, the propagation, and the critical pressure is that pressure above what you can have propagation and below what you have arrest.
Q. What sort of pipe is being tested in the graph that's depicted on this page, if you know?
A. I don't think the ISO test method states what type of pipe it is.

Q. So is this diagram taken directly out of ISO --
A. Yes.
Q. -- 3.93477?
A. I believe it is, yes. I think that's where I got it from.
Q. On the next page, the S4/FS correlation equation, the last bullet point on the page says, "The ISO correlation factor is conservative and material suppliers may develop their own correlation between S4 and Full Scale." Do you see that?
A. Yes.
Q. What is meant by the word "conservative" in that sentence?
A. The number 3.6 was obtained from doing a lot of testing on polyethylene pipe, approximately a dozen or so data sets where they did both full scale and S4.
The actual number based on the actual testing varied from three point something to nine. The RCP experts selected to use the number 3.6 because it was based on certain gas loss, and that number is quite conservative.
So as a pipe manufacturer, you have the option of doing the full-scale test and get the real

answer or you have the option of doing the S4 test using this correlation equation, which is applicable to plastic materials, and then that's how you determine your full scale critical pressure.
Q. So is it fair to say that whatever critical pressure you yield utilizing this correlation equation is going to be lower, most likely, than what you would find in a full-scale test?
MR. FITZPATRICK: Objection to form.
BY MR. SHEEAN:
Q. That's what you meant by "conservative", right?
A. Perhaps, yes, uh-huh. Yeah, it does depend. Like from the case of polyethylene, there's a wide range, and it was conservative there.
Q. All right. The next page is the -- it says "S4 Critical Pressure-PVC*", and at the bottom it says, "C.J. Greenshields and P.S. Leevers, "The effect of air pockets on rapid crack propagation in PVC and PE water pipe", Plastic, Rubber and Composites Processing and Applications 24(1995)." Is that right?
A. Yes.
Q. And that citation at the bottom, that's what you're relying upon for this slide, correct?
A. This slide came from that paper, yes.

Q. And your calculations on critical pressure for PVC pipe throughout this entire presentation stems from this calculation that was done by Greenshields and Leevers, right?
A. Partly.
Q. What else is it from?
A. From the S4 critical pressure calculation that was conducted by Jana Laboratories on the 12 inch fusible PVC pipe, and they also obtained a value of 1.6 bar, which is exactly consistent with the data from Dr. Leevers.
Q. Okay. Have you read the report that you cite at the bottom of this page in its entirety?
A. At one time I read it in its entirety, yes.
Q. Do you recall whether or not -- well, strike that. This slide specifically indicates that for the first data point, which shows a critical pressure somewhere in the neighborhood of 3.8 bar, that's for essentially water-filled pipe or maybe two percent water-filled pipe -- two percent air-to-water-filled pipe; is that right?
A. Yes.
Q. Okay. Do you know -- well, strike that. The remaining data points, of which there are four,

involve a greater percentage of air, correct?
A. That's correct.
Q. ISO13477 requires that the test be conducted on a medium that the pipe was intended to convey; is that correct?
A. I'm not sure if that's a requirement or if that's a recommendation.
Q. Well, if it is a requirement, would you agree with me that the only data point that would be in compliance with ISO13477 would be the first data point?
MR. FITZPATRICK: Objection. Form. Incomplete hypothetical.
THE DEPONENT: No.
BY MR. SHEEAN:
Q. Why not?
A. Because in the real world there are a number of times when actual water pipes have air in them.
Q. But if the standard calls for -- I know you're not sure if it does or not, but I'm -- but I'm -- in this hypothetical, if the standard calls for the test to be conducted solely using the medium that the pipe was intended to convey and that's water, then the only data point that has essentially 100 percent

water is the first data point, right?
A. I would disagree with that.
Q. Why?
A. Because the pipe may be intended to carry 100 percent water, but if, in fact, there are times that the pipe has, for example, 10 percent water, then you would do the test with 90 percent water and 10 percent air. And that would be more indicative of the actual field situation.
So doing this test at various levels of air is perfectly appropriate to determine what the effect of the air is on the critical pressure.
Q. Regardless of what ISO13477 says?
MR. FITZPATRICK: Objection. Form.
THE DEPONENT: Well, you have to remember that ISO13477 is a test method, and when you do research, you use that test method in order to find out certain effects. And the purpose of the study was to determine the effect of air in the water pipe.
BY MR. SHEEAN:
Q. Okay. The test results that were depicted in slide 698 -- 00698 that we're looking at right now, this was done in 1995 on UK manufactured PVC pipe, correct?

A. Yes, that's correct.
Q. Would you agree that the UK manufactured pipe in 1995 is known to be deficient in certain key material qualities when compared to modern-day feasible PVC pipe?
MR. FITZPATRICK: Objection to form.
THE DEPONENT: It certainly is different. I would agree to that, yes.
BY MR. SHEEAN:
Q. The UK manufactured pipe that was used by Greenshields and Leevers had a lower HDB based pressure rating than pipe of a similar dimension ratio manufactured in accord -- in accordance with current AWWA C900 standards, correct?
A. I don't know it was ever tested for the HDB rating. When it was pressure rated by Dr. Leevers, the pressure rating that he obtained was based on the MRS system, the ISO system.
Q. Do you know what the British standard for the pressure rating was for the UK test -- UK manufactured pipe that was used by Greenshields and Leevers?
A. No.
Q. Has anyone ever told you that the UK manufactured pipe used in the tests described on

UGSI698 and 699 had a pressure rating of 174?
A. Was that the calculated pressure rating base converted from the --
Q. The British standard.
A. The British standard or the -- I think Dr. Leevers also had the pressure rating of the pipe based on the ISO system in his paper, if I recall.
Q. Did you ever do the conversion to see what it would be from the ISO standard to --
A. No. They are totally different pressure ratings using a totally different data set. If you're referring to the calculation that I made on the next page, if that's what you're getting to --
Q. No.
A. Okay.
Q. No. I'm talking about the British standard that was in place --
A. Yes.
Q. -- in 1995 when Greenshields and Leevers performed this test. Are you aware of what -- that the pressure rating under the British standard for UK manufactured pipe was 174?
A. Yes, and I'm aware that's different from the pressure rating that's used in the US.
Q. For US made pipe?

A. No. I said from the pressure rating method used in the US, which is different from the pressure rating method used in ISO.
Q. Do you know whether or not the pipe that was used by Professors Greenshields and Leevers in 1995 met the current AWWA C900 standards?
A. No, I don't know that. And that's why I felt it was important when I made this calculation to -- to base it on the information which I knew was based on actual fusible PVC pipe made in accordance with AWWA C900 and the value of 1.6 bar that I obtained from that study, which, of course, is under the protective order and I can't speak about it in public. But I know that the value of the AWWA C900 pipe had a value of 1.6 bar.
I'm using in the presentation the data from Dr. Leevers, which, yes, it is on European pipe. It was made according to British standard and not the AWWA standard, but it still had the same value of 1.6.
When I give the presentation to an audience, I'm stating it's based on the 1.6 bar, but I know for a fact that in addition to being based on this number, the value of 1.6 bar is also based on the test results done on fusible PVC pipe 12 inch DR18 where the exact same value of 1.6 bar was obtained.

Q. You keep saying 1.6 bar. Go back to this slide on S4 critical pressure. Draw a line up to the 10 percent air plot.
A. You mean this line here?
Q. No, sir, 10 percent air, right here on the Y -- on the -- on that axis. Here, come up. No, no, no. Here's the plot right here, the dot. Not the line that's drawn down here, but the dot. What is --
A. Well, the dot is the data point.
Q. Yes. What is that data point?
A. Well, the data point always goes above or below our regression line. I'm basing it on the regression line.
Q. Okay. And at 10 percent air, where does the regression line fall?
A. Well, it's -- what I'm going to is the -- where this straight line ends.
Q. Well, you're curving it --
A. Which is --
Q. -- to the right then?
A. Which is approximately 10 percent.
Q. Approximate -- okay. So now it's approximately. Where in this report do you say that you're extrapolating and approximating --
A. Right here.

Q. -- the bar?
A. Where it says the PV -- the S4 critical pressure is equal to 1.6 --
Q. No, this states equal to, not --
MR. FITZPATRICK: Can he finish -- can he finish his answer?
THE DEPONENT: Equal to or greater than.
MR. FITZPATRICK: You just want him to --
THE DEPONENT: Equal to or greater than 10 percent air. What I'm saying is that it is 1.6 bar when it is equal to or greater than 10 percent.
BY MR. SHEEAN:
Q. Okay. Well --
A. The 10 percent is an approximation based on looking at the graph.
Q. The term "equal to or greater than" would require the finding that 10 percent air yields that finding, and 10 percent air on this data plot comes up with a number of 2.3 bar, not 1.6. If you use 2.3 bar, you come up with a drastically different critical pressure, don't you?
MR. FITZPATRICK: Objection. Form. Assumes facts.

THE DEPONENT: This number -- the 10 percent is a rounded number based on the regression line. If you want to be more exact, you might say 10.9 or 11 percent, but it's not -- anybody that looked at this graph and says where this regression line is linear, you look at a graph and say, "Oh, from 10 percent and above."
That's what a reasonable person looking at the graph would say, that the linear regression line is 10 percent and above.
BY MR. SHEEAN:
Q. The data point at 10 percent air is 2.3?
A. I'm not --
Q. I'm asking you another question now, Doctor. Please listen to my question and try to answer it.
A. Okay. Yes.
Q. Focus.
A. All right.
Q. At 10 percent --
MR. FITZPATRICK: It's a statement, not a question, but go ahead.
BY MR. SHEEAN:
Q. At 10 percent air the data point, would you agree, is at 2.3?

A. No.
Q. The data point, the point above your regression line, where would you say that's at?
A. Well, the data point is not at 10 percent. It's a little bit less than 10 percent.
Q. Okay. Where is that data point at?
A. I don't know. It's probably around nine point something.
Q. Where is that plot on the Y-axis, the third data point?
A. It's at about two point something bar.
Q. 2.3 bar?
A. Roughly, yeah.
Q. If you take that data point as the basis for your calculation, what is the critical pressure of that pipe at 9.99 percent air?
A. I'm not taking that data.
Q. I'm asking you another question.
A. Totally unrelated to what I did and calculated?
Q. That's correct.
A. Okay. You could take this data point. You could take -- you could take any data point.
Q. I'm asking about the third data point that's shown on the Greenshields and Leevers chart.

A. If you were to ignore the regression line and take that data point, then at nine point something percent air that data point has a critical pressure of about 2.3 bar.
Q. 2.3 bar is going to yield a significantly higher critical pressure than the 121 psig that you find on the next slide, correct?
A. As would this data point or as would that data point, yes, that's correct. They're all above this linear regression line.
Q. Which falls somewhere between 10 and 11, right?
A. Yes. It's approximately 10 percent.
Q. Just as this data point at 2.3 is at approximately 10 percent?
A. Right. And the point that I'm making from the graph is that at approximately 10 percent and above the critical pressure is 1.6 bar, and that's the number I'm using for the calculation. And another reason for using the 1.6 bar is because that is the exact number that was obtained by Jana Labs on fusible PVC pipe.
Q. But you're not allowed to report on Jana Labs. So this report, is it fair to say, does not rely upon the Jana Labs findings?

A. Because the --
MR. FITZPATRICK: Objection. Form.
THE DEPONENT: I am not allowed to state publically that it's based on the Jana Labs critical pressure determination. I'll wait until you're finished.
BY MR. SHEEAN:
Q. So are you using --
MR. FITZPATRICK: Well, hold on.
BY MR. SHEEAN:
Q. -- the knowledge that's --
MR. FITZPATRICK: Hold on.
THE DEPONENT: I was --
MR. FITZPATRICK: He was not --
THE DEPONENT: I was trying to be polite and wait until you were done so you could listen to me.
BY MR. SHEEAN:
Q. Sorry.
A. That's all right. I cannot state publically this calculation is based on the 1.6 bar value from Jana Labs obtained on fusible PVC, the 12 inch DL 18.
I can't publically state that, but I know for a fact that it is. And that's why I have

confidence in this calculation because I know that 1.6 bar was obtained on fusible PVC pipe.
Q. So you're using information that is barred under a protective order from disclosure or use of any kind by you to rationalize the statements that are in this presentation?
A. Yeah. I cannot publically state that, that's correct. I'm prohibited from stating that.
Q. But if you're relying upon it to make a public statement, isn't that the same thing?
MR. FITZPATRICK: Objection. Form.
THE DEPONENT: No. I'm relying on it to give myself confidence. The calculation I'm using is the calculation from Dr. Leevers. But I know personally and privately, and that gives me more confidence in that number because I know it also is the same as a critical pressure obtained on the fusible PVC pipe.
I can't tell people that, but for me personally and privately it gives me comfort in knowing that it's the same number.
BY MR. SHEEAN:
Q. And, again, the pipe that you obtained for that Jana Labs research, where did it come from?
A. It was 12 inch DR 18 fusible PVC pipe

that Mr. Bruce Papenhause purchased from a distributor.
Q. Which distributor?
A. I don't know. You could ask him, and he could tell you.
Q. Did -- how do you know that it was authentically created fusible PVC pipe?
A. Because I think I said it on the --
Q. Well, I mean, you weren't involved in the purchase. So that's why I'm asking.
A. No. I mean, Mr. Papenhause purchased --
Q. What --
A. -- 12 inch DR 18 pipe.
Q. And how do you -- strike that. Who did the fusion of the joints for that pipe?
A. First of all, you have to understand the pipes that were used to obtain the critical pressure had no joints in them. They were just straight pieces of pipe.

In a subsequent test after the critical pressure was determined, then they selected -- the laboratory selected a test pressure above the critical pressure so they knew the crack would run the length of pipe and then did testing on pipe of the butt fusion joint, pipe with a bell-and-spigot joint, to confirm what was observed in the field.

And that is that the running crack goes through a butt fusion, but the running crack does not go through a bell-and-spigot joint.
Q. What was the air/water mixture used for the Jana Labs testing?
A. I believe I already told you that it was 100 percent air.
Q. So --
A. And if you --
Q. Sorry.
A. If you look at the plot from Dr. Leevers, what he showed was that -- and going from air filled to 10 percent air, it's the same critical pressure.
Q. But you can't confirm from the Jana Labs test that a 10 percent air-filled pipe would have a 1.6 bar critical pressure, can you, because you never ran that test?
A. That's correct. You cannot -- we have to make that assumption. What I can do, however, is look at the actual failures in fusible PVC that have occurred and look at the actual pressure where the RCP occurred.

We know what the actual pressure was, either an installed pressure or a test pressure. We know what the internal pressure was. By definition,

the calculated -- the critical pressure has to be below that, and as I showed in the two examples here, the calculated critical pressure from this calculation was just below the actual pressure at which the RCP failure occurred. So that confirms that the critical pressure is very close to that value.
Q. So now you're relying upon the anecdotal evidence that you have from engineers and operators that we've already talked about in this report of leak pressure testing failures that have occurred, right?
MR. FITZPATRICK: Objection. Mischaracterizes, form.
THE DEPONENT: Anecdotal?
BY MR. SHEEAN:
Q. You weren't present when these leak test failures occurred, correct?
A. That's correct.
Q. And they weren't done under laboratory conditions that are controlled so that you can accurately measure all of the conditions and the results, correct?
A. The actual test pressure was not in a laboratory. The actual test pressure was in the field, and that was the pressure that was recorded.
Q. And, again, you weren't present?

A. I was not present, but I talked to a person that was present.
Q. So that's what I mean when I say "anecdotal". You weren't there. You didn't record it, and you didn't rely upon a laboratory scientist to record the information?
A. Yes, it was not done in a laboratory. It was done in the field in the real world.
Q. And you don't know what percent of air was in those pipes when those leak pressure test incidents occurred, do you?
A. No. We know that -- from the studies that Dr. Leevers has done, we know that air will reduce the critical pressure. That's what his studies have shown, and it was, I believe, corroborated in the paper that Tom gave based on Dr. Choy's data.

He obtained the same thing; that as you increase the percent of air, that you decrease the critical pressure. We know that the -- that the -- what the pressure was at the time of the RCP failure. So we know the critical pressure has to be below that.
Q. Okay. Let me ask you this: Do you have any corroborating evidence other than the Greenshields and Leevers chart that we were looking at that provides

you with an understanding of what the critical pressure would be for DR 19 fusible PVC pipe at a 10 percent air/water mixture?

A. First of all, I don't know if UGSI makes DR 19. I think they make DR 18. I don't know if they make DR 19 or not. I think they make DR 21 and 18, but I don't think they make DR 19. Would you want to restate your question?

Q. Does your analysis of the critical pressure of fusible PVC pipe vary based on the DR rating of the pipe?

A. The -- the pressure will vary based on the -- based on the DR of the pipe. Yeah, the critical pressure will vary based on the DR of the pipe.

Q. And so if Dr. Leevers used DR 19 --

A. Right.

Q. -- in your Jana Labs tests, you used DR 18?

A. 18, right.

Q. Other than Dr. Leevers analysis of the DR 19 --

A. Uh-huh.

Q. -- do you have any corroborating evidence to support your position that the critical pressure for DR 18 would be 1.6 bar at 10 percent air?

MR. FITZPATRICK: Objection. Form.

THE DEPONENT: I have Dr. Leevers data.

BY MR. SHEEAN:

Q. I said besides that.

A. Right. I have Dr. -- the Jana Labs data. Both of them are very close, and if you look at that calculated critical pressure and compare that to the known pressures where RCP has actually occurred, pressure has to be -- critical pressure has to be below that, and the numbers come out very, very close. So I think the real world corroborates that.

Q. Other than the Greenshields and Leevers test, none of the other examples that you gave involved 10 percent air/water mixture, did they?

MR. FITZPATRICK: Objection to form.

THE DEPONENT: It's very possible that -- just listen to what I'm saying. Okay? It's very possible that the -- see, I view the real world as a research lab. Okay? Because it's data point. It's experiments. It's things that happen in the real world. Okay?

It's very possible that these RCP failures that are occurring have 10 percent or more air. They have been reported to have high volumes of air. It's very possible that they did

have 10 percent.

Something must have happened to reduce the critical pressure. We know the RCP failure occurred. We know the critical pressure has to be below the RCP pressure where the RCP failure occurred. Something had to have lowered that critical pressure.

The most logical thing to have lowered the critical pressure is the air in there because we know from Dr. Choy's data and Dr. Leevers' data that as you increase the pressure, you decrease the critical -- excuse me, as you increase the air content, you decrease the critical pressure.

BY MR. SHEEAN:

Q. And that's true in HDPE pipe too, isn't it?

A. Of course. The data showed --

Q. -- pipe too, isn't it?

A. Yes, exactly. Here's the -- you see the exact same thing.

Q. So, Doctor, I -- I -- I am not interested in what's possible, what could be happening out there. I'm talking about -- I mean, you've got a Ph.D.

You had to stand up in front of your dissertation committee and have verifiable, accurate

data in order to stand behind your dissertation, right?

A. Yeah, and I stand behind what I'm saying here.

Q. So in -- in the -- in terms of what's --

A. Uh-huh.

Q. -- demonstrable as a scientist --

A. Yes.

Q. -- the only instance where a -- an experiment was run. The only example that you have of 10 percent air and fusible PVC pipe is the data point that was done by Greenshields and Leevers in 1995; is that right?

MR. FITZPATRICK: Objection. Asked and answered.

THE DEPONENT: Well, I believe as a scientist and in giving this presentation I have that data point. I have the corroborating evidence from the Jana Lab study, and I have those two, which I believe correlate very well with the real world RCP failures that have occurred. As a scientist, as a researcher, I can put those altogether.

BY MR. SHEEAN:

Q. You're not answering my question, sir.

A. I thought I was.
Q. No, you're not.
A. I'm sorry. Okay.
Q. I'm asking you a very straightforward question. Let me break it down for you smaller.
A. Okay.
Q. You've given me a couple of different instances. Jana Labs tests were done at 100 percent air, correct?
A. Correct, which is, according to Dr. Leevers, equivalent to 10 percent air and water.
Q. That's not 10 percent air and water, though, right? It's 100 percent air?
A. Which is equivalent it 10 percent air and water.
Q. That's not my question, sir. Please follow --
A. I'm giving you the answer.
Q. No. The question is: The tests that you did or that you read --
A. Uh-huh.
Q. -- from Jana Labs involved 10 percent -- or 100 percent air, correct?
A. Correct.
Q. Okay. The instances that occurred in the

field that you're referring to of what you perceived to be rapid crack propagation during leak pressure testing, you have no way of knowing exactly what the percent air content was in those pipes, do you?
A. The actual RCP failures which occurred in the field have some air content. They reported to have air. We don't know the actual air content.
Q. Thank you.
MR. FITZPATRICK: Go ahead.
THE DEPONENT: I was done.
MR. FITZPATRICK: Let's take a break. We've been going an hour and a half.
MR. SHEEAN: We've been going not even an hour. We didn't --
MR. FITZPATRICK: I have to go to the restroom. I'll be back in five minutes. If you want to take 20 minutes with your colleagues here like you did the last time, that's what we'll do.
MR. SHEEAN: On the record, this deposition will not finish today, and I'm going to be seeking leave to continue the deposition after --
MR. FITZPATRICK: Because I have to go to the bathroom --
MR. SHEEAN: No.

MR. FITZPATRICK: -- for five minutes?
MR. SHEEAN: No, because we're -- I'm having to ask the question five times to get a straight answer. Off the record.
THE VIDEOGRAPHER: It's 2:38. Going off the record.
(The deposition was in recess.)
THE VIDEOGRAPHER: It's 2:42. We're back on the record.
BY MR. SHEEAN:
Q. Mr. Palermo, do you know the outside diameter of the pipe that was tested by Greenshields and Leevers?
A. It might have been around 110, maybe, milliliters.
Q. What does that equate to in inches?
A. Probably around four -- four or five inches.
Q. Okay. What was the outside diameter of the pipe that was tested at Jana Labs?
A. The 12 inch.
Q. So is there a difference in terms of critical pressure that you would expect between a four inch outside diameter and a 12 inch outside diameter pipe?

A. I don't think there's been sufficient testing on PVC pipes to make that determination.
Q. Generally speaking with pipe, is that true, that the greater the outside diameter the critical pressure would change?
A. It's really more wall thickness dependent. In the case of polyethylene, that relationship has been established. I don't believe that relationship has been established for PVC.
Q. Did you conduct multiple tests on different outside diameter fusible PVC pipes with Jana Labs in order to make that determination?
A. No. We selected 12 inch for two reasons. Number one, it was the -- the largest pipe that Jana could actually test that had equipment for, but also 12 inch at least was in the range of the various sizes that -- where RCP had fully occurred in the field. I believe the smallest diameter was eight inch, and, of course, the largest was around 30 inches.
Q. Did you coordinate directly with Jana Labs on the specific parameters of the testing that was done?
A. No. We basically asked Jana Labs to follow the -- the ISO test method and to determine the critical pressure, and then once they obtained the

critical pressure, to select a pressure above the critical pressure and then to test the -- the pipe at the joints.

Q. Why didn't Jana Labs try to replicate what was done by Greenshields and Leevers in terms of modifying the water and air pressure mixture?

A. I don't believe they were set up to test in water. They were set up to test in air.

Q. So there was a limitation in the laboratory?

A. At the time, yes.

Q. Okay. Would you agree that in order to try and verify the testing that was done by Greenshields and Leevers, it would be better evidence to have replicated the air/water mixture in those data points?

MR. FITZPATRICK: Objection. Form.

THE DEPONENT: It's always better to have more data. We were basically at the time trying to, at least, get some data on actual fused PVC pipe because there was no data at the time and then also to confirm that the crack would go through the butt fusion joint and stop at the bell-and-spigot joint.

BY MR. SHEEAN:

Q. Have you ever contacted Greenshields and Leevers regarding this slide and the information that's provided in it?

A. I have spoken to Dr. Leevers many times. I've never met Mr. Greenshields.

Q. Have you spoken with Leevers regarding this specific slide?

A. Yes.

Q. What have you and Pat Leevers discussed about that?

A. Well, exactly what the data showed, that both for polyethylene and PVC it showed that you as you increase the amount of air that the critical pressure decreases.

Q. Did Dr. Leevers tell you that the data points -- all but the last data point, the four data points to the left on UGSI698, involved testing that was done with the baffles completely sealed against the inside of the pipe?

A. I don't believe we discussed about the baffle situation.

Q. Were you aware of that?

A. No.

Q. Would you agree -- have you ever seen a document that specifically states that the baffles on

the testing to the first four points was done with the baffles sealed completely to the inner wall of the pipe?

A. I don't recall any discussion on baffles other than a discussion I had with Dr. Leevers in front of Shulton when they're doing testing with the 100 percent water, and their belief is when you have 100 percent water, that you don't even need the baffles.

Q. Do you know what ISO 13477 says about how the baffles should be placed inside the pipe walls?

A. I'm -- I'm sure I read it one time. I don't have it memorized.

Q. Would you be surprised to see that it does not allow for the baffle to be completely sealed against the inside wall of the pipe?

A. If that's what you're saying it says, that's what the test method says.

Q. Wouldn't that surprise you?

A. No. I'm sure what Dr. Leevers was doing was using the test method, and actually at the time he did this study I don't think it was an ISO test method. He had developed the S4 test method and was doing research on it, and part of the research was to determine the effected air.

Q. Do you believe that -- assuming baffles

were sealed against the inside pipe walls for the four left most data points on UGSI698, that having the baffles completely sealed would have changed the critical pressure of the pipe?

MR. FITZPATRICK: Objection. Form.

THE DEPONENT: I don't know. All I know is what the data shows. The data correlates with the Jana data and air. And all -- what I do is I then take those data and compare it to the real world, the actual failures that have occurred, and what I see is a very good correlation.

BY MR. SHEEAN:

Q. What are the baffles -- what's your understanding of what the baffles do inside of the pipe?

A. The full-scale test requires a large reserve of air in order to get the crack to -- to propagate. My understanding is the baffles have -- in effect allow you to -- to run the same kind of experiment but with a much shorter section of the pipe, and it's because of the baffles then that you have to have the correlation equation.

Q. So the baffles allow for you to use a much shorter piece of pipe --

A. Yeah. It has to do with the velocity of

the crack.
Q. It slows down the crack?
A. Exactly.
Q. And if the baffles are completely sealed against the inside wall, it's going to change the -- the outcome, right?
A. It could be. I don't know exactly what Dr. Leevers did or why he did it. Being the inventor of the test, I'm assuming he knew what he was doing.
Q. In fact, if the baffles had been used in compliance with ISO 13477, that would have allowed the pressure to release more rapidly than using the sealed baffles, correct?
A. Perhaps. Again, I don't believe that Dr. Leevers' test back at this time and era were in conformance with the ISO standard test method because I don't think it actually existed then.
Q. And if the pressure would have been able to release more rapidly than using sealed baffles, that would have resulted in a higher critical pressure, correct?
MR. FITZPATRICK: Objection. Form. Calls for speculation.
THE DEPONENT: I don't know. Again, all I go by is the actual data that he published.

BY MR. SHEEAN:
Q. Do you have an opinion as to how much air should be allowed in a properly operated water pressurized pipeline during operation?
A. If you talk to the pipe manufacturer, I think their position is there should be no air whatsoever. If you talk to a contractor that installs pipe, they'll tell you there are times that there's always going to be some air in there.
They always try to get rid of the air, but in the real world the practicality is there's always some -- some air in there.
Q. But aren't there pressure release valves that can allow the air to escape?
A. Yes. It depends on how good those valves are working and so forth. Like I said, ideally you have no air, but there are times that you do have air in them.
Q. Do you know if there's a standard in place that dictates what the allowable air pressure -- percent of air is in a properly operated water pipeline?
MR. FITZPATRICK: Objection. Form.
THE DEPONENT: If there were a requirement, it would be probably in EWA C605 or

maybe the M23 manual. I don't know if there is or not.
BY MR. SHEEAN:
Q. Now, the next slide that you're looking at now, which is UGSI699, all of the calculations on this slide, as you say, are based on equal to or greater than 10 percent air, correct?
A. Correct.
Q. And that's this 1.6 bar, the --
A. The linear regression.
Q. The linear regression line that you're referring to that -- why does this line come to a point and then extrapolate as opposed to a curve like you typically see in a linear regression line?
A. Because what Dr. Leevers did was to draw the linear regression line through the points. That's a straight line. That's how --
Q. But the next point down here, it's not a straight line to this line?
A. Right. That's how he chose to draw the regression line through the points.
Q. But is that -- is this typical for a regression line?
A. For a regression line, yes. A line is a straight line usually.

Q. Well, how about a --
A. You can see the -- if you look at this chart here, you can see that it's four data points here. A three data -- that pretty well defines the line through those data points. That's the regression line through the data points.
Q. So all of the assumptions on slide 23, which is 699, again, rely upon the assumption that you're operating a water pressurized pipeline at equal to or greater than 10 percent air, correct?
A. As I so state here, correct.
Q. But you're using the 10 percent -- I'm sorry, the 1.6 bar. Although, we already established that even under the regression line that's beyond 10 percent where it starts?
A. It's about 11 percent maybe.
Q. Okay. Do you know where the pipe that was tested by Greenshields and Leevers was manufactured?
A. No, I do not.
Q. Do you know to what standard it was manufactured?
A. It might have been a British standard, but I don't know that for a fact.
Q. Did you ever ask Dr. Leevers what the

British standard that the pipe was manufactured to was?

A. No.

Q. Is it listed in this paper?

A. It might be.

Q. On this slide in the bottom left you say that for DR 19 PVC pipe the corresponding HDB base pressure rating is 222 psig. Do you see that?

A. Yes.

Q. Where did you get that number from, 222?

A. From the equation pressure ratings equal to two times the HDB times zion (phonetic) factor divided by the DR minus one.

Q. Where did you get the HDB number that you used in that calculation?

A. I used the standard HDB value of 4,000 psi for pressure rated PVC.

Q. You yourself have never conducted any S4 pressure tests on fusible PVC pipe in order -- in accordance with ISO13477, correct?

A. I personally have not conducted the test. I requested that Jana Laboratories conduct the test on fusible PVC pipe in accordance with ISO13477.

Q. And you yourself have never attempted to conduct any test to determine the critical pressure of

water pressurized fusible PVC pipe, correct?

A. That's correct.

Q. Would you agree that there is no scientific basis on which to claim that the correlation factor derived from testing HDPE pipe using 100 percent air as the medium is conservative when applied to PVC pipe testing using water as the medium?

MR. FITZPATRICK: Objection. Form.

THE DEPONENT: The equation is based on a gas law, which is independent of material, and the ISO standards specifically state that the correlation equation is independent of material, meaning it's applicable to plastic pipe materials.

The one exception to that is a polyamide because of the fact that polyamide absorbs moisture, and it has been found that the -- using the correlation equation results in extremely low values compared to full scale.

So based on that, the ISO standards for polyamide pipe require that the -- only the full-scale test be used because the S4 results are so low.

BY MR. SHEEAN:

Q. I'm going to ask you about the incidents

where there was RCP in Dorchester and Chatham. For Dorchester, you don't know, do you, whether or not there was actually 30 percent air in the pipe at the time of the incident, do you?

A. You said 30 percent?

Q. Correct.

A. I don't know what the percentage of air was.

Q. It could have been 40 percent air?

A. It could have been 40. It could have been 10. I don't know.

Q. It could have been 50 percent air?

A. It's possible. I don't know.

Q. And the same thing with Dorchester, you don't know what the actual --

A. That was Dorchester.

Q. I'm sorry, Chatham. The same thing for Chatham, you don't know what the actual percent air was in the pipeline at the time of the incident, correct?

A. That is correct.

Q. It could have been 20 percent air?

A. I do not know what the percent was.

Q. It could have been 50 percent air?

A. That's the same as not knowing what's in there.

Q. Using the 4,000 PSI HDB that you did for slide 23 in Exhibit 1 assumes that the British pipe has the same HDB as the AWWA pipe, correct?

A. Yes. It assumes that it's PVC pipe and it would have an HDB of 4,000 PSI, which is what pressure rated PVC pipe has.

Q. Have you ever tried to confirm that the British pipe does, in fact, have the same HDB?

A. I've seen hundreds of data sets for pressure rated PVC pipe, and they all have -- from Europe and the US, and they have 4,000 PSI HDB.

Q. I'm not sure you answered my question. Have you ever tried to independently confirm that British pipe does, in fact, have the same HDB?

A. That particular lot of DR 19 pipe that was tested, no. I know that there are many lots of PVC pipe, both European and US, that I have seen that all have an HDB of 4,000 PSI.

Q. Manufactured before 1995?

A. It's been around -- PVC has been around for a long time, yes. Ever since the '60s, PVC has had an HDB of 4,000.

Q. I'm going to talk about butt fusion failures now. Look at slide 36, UGSI712. Did you prepare this slide, sir?

A. I did.
Q. What -- what did you do to confirm that the information that's displayed in this slide?
A. The same thing: The information that was provided to me, photos that were provided to me, reports that I read, et cetera.
Q. Did you save the records that you compiled to generate this chart?
A. I have some of the information. I'm not sure I have all of it.
Q. Has whatever information that you have in your possession regarding the information that you used to create this chart been produced to us in litigation -- in this litigation?
A. Yes.
MR. FITZPATRICK: Objection to form. Go ahead.
THE DEPONENT: I'm sorry. Any e-mails that I had related to this I have produced.
BY MR. SHEEAN:
Q. I wasn't asking -- limiting my question to e-mails.
A. I'm sorry.
Q. Have you produced all of the records that you have that you believe support the facts that you've

relating to this case since the case started, correct?
A. Hopefully not.
Q. Well, I would just ask that you confirm with your counsel that whatever you have relating to specifically Exhibit 1, but any of the presentations, confirm that it's been produced.
What did you do to -- I'm sorry, I already asked that question. Do you know which of these alleged butt fusion failures occurred in service?
A. No. Well, do I know which ones? I -- I believe the ones in London, Ontario were in service. I spoke to the engineer that works for the water company there.
The Haynesville Shale, Louisiana, that's the Texas/Louisiana. I believe those were in service, and I spoke to a number of people there. Collier County, I believe that one was in service. The rest of them I'm not sure.
Q. Don't you think that your audience members would be interested to know which one of these incidents occurred while the pipe was in service?
MR. FITZPATRICK: Objection. Foundation.
THE DEPONENT: No. I think they're more interested in the fact that the butt fusion failure occurred.

set forth in UGSI712?
MR. FITZPATRICK: Objection. Form.
THE DEPONENT: Most of the information, the records that I would have, would be in the e-mails and the attached documents, reports that the documents would have.
BY MR. SHEEAN:
Q. Have you produced all of the documents that you have regarding the incidents that are displayed in slide 36, UGSI712, beyond the e-mails and the attachments?
MR. FITZPATRICK: Objection. Form.
THE DEPONENT: I believe that I have. I can't be positive that I have.
BY MR. SHEEAN:
Q. What do you need to do to confirm that you've produced all of the records that you have regarding this?
A. See if there's any other documents that I have, but I'm just not sure where I would have kept those because this is a lot of information that I put together, you know, a few years ago. I may or may not have those documents anymore.
Q. This litigation has been pending for two years. So I assume you haven't thrown anything away

BY MR. SHEEAN:
Q. How many joints were involved in these projects, if you know?
A. My recollection is that for these 18 cities a total number of butt fusion failures was approximately 50.
Q. And how many joints were there on those jobs total?
A. I don't know.
Q. And how many -- I already asked that. You don't know how many of those were in-service failures versus testing failures, correct?
A. I listed the ones that I knew for sure were in service. The others could have been or could have failed right after the fusion was made. I don't know.
Q. If UGSI had over 150,000 joints in service as of the end of 2012 and only three incidents of in-service failures, that would be a pretty remarkable rate, wouldn't it?
MR. FITZPATRICK: Objection. Form.
THE DEPONENT: I have a total of 50, actually.
BY MR. SHEEAN:
Q. That's not my question, sir. You need to

try to answer my question.
A. I think there were more than three in service.
Q. Okay. But in my question --
A. Okay.
Q. -- only three in-service failures from 150,000 joints, that would be a remarkable record, wouldn't it?
MR. FITZPATRICK: The same objection.
THE DEPONENT: I'm not sure what you mean by "remarkable", but it would be a good record.
BY MR. SHEEAN:
Q. What's the failure rate of HDPE butt fusion joints?
A. I don't know.
Q. Have you ever done a chart like this of known HDPE BF failures?
A. No.
Q. Why not? I mean --
A. I have not gone to -- I have not prepared a paper on that.
Q. If the rate of failure of butt fusion joints in HDPE is comparable to or greater than the rate of failure in PVC butt fusion joints, wouldn't your audience be just as interested to know about those

failures?
MR. FITZPATRICK: Objection. Foundation. Incomplete hypothetical.
THE DEPONENT: Well, first of all, polyethylene has been around since the '60s and have been butt fused since the '60s. The butt fusion of PCV is relatively new.
We are just now adding the butt fusion of PVC to the standard like AWWA, and so it's because of its novelty or relative novelty that I was preparing this.
BY MR. SHEEAN:
Q. Yeah, you had said there were 50 joint failures on this page. I see 18 projects listed. Where did -- how did you come up with 50?
A. Like I said, my recollection is that there were 18 cities. Some of these cities had more than one butt fusion failure, and if you took at the total number of butt fusion failures, that number would be above 50.
Q. And how do you know that?
A. Because on another chart that I had I kept a record of the number of failures for each city, and I recall that that total number was around 50.
Q. Have you produced that chart to us?

A. It might be in one of the papers. I don't remember.
Q. I can tell you I haven't seen it. So in terms of coming up with the number 50, did you ever go inspect any of these field -- any of these butt fusion joints to see of any failures?
A. No, for none of these that I physically laid my eyes on or hands on any of the butt fusion failures.
Q. How many of these did you receive a report from an independent inspector or investigator?
A. There were a number of these that I read reports on.
Q. I'm sorry, from independent inspectors?
MR. FITZPATRICK: Objection. Form.
THE DEPONENT: I don't remember who authored the reports.
BY MR. SHEEAN:
Q. You said a number. What number?
A. I'm sorry?
Q. You said for a number of these you read reports. So I'm asking if you know specifically what number of these 18 incidents did you read reports on the butt fusions failures?
A. I don't recall now.

Q. Do you have any of those reports anywhere?
A. I don't recall.
Q. If you have any such reports, would they have been produced in the course of discovery?
MR. FITZPATRICK: Objection. Form.
THE DEPONENT: Again, some of the reports I would have had would have been attached with the e-mail, and I produced e-mails. And, of course, the reports would also have been attached to them.
BY MR. SHEEAN:
Q. Please confirm with your counsel after today's deposition that you've produce all of the reports, records, and documents that you have in your possession that support your statements in this document.
Did you ever make the following statement to Robert Walker of Underground Solutions, quote, I will no longer provide negative information about butt fusion of PVC pipe. I believe that Underground Solutions has conducted significant testing to develop the proper butt fusion procedure for PVC pipe, and your field failure rate is very low?
A. Yes.
Q. And since you made that statement to

Mr. Walker, have you attempted to contact anyone to whom you previously presented information regarding -- on slide 36 through 42 of Exhibit 1 to advise them you believe UGSI's butt fusion procedure is proper?

MR. FITZPATRICK: Objection. Form.

THE DEPONENT: No. What I believe I said to Mr. Walker was that I would no longer give any presentations about the butt fusion integrity of PCV butt fusions.

BY MR. SHEEAN:

Q. And I understand that, but my question is: Did you take any overt action to try and correct the record that was created by Exhibit 1 of butt fusion failures in fusible PVC K pipe?

MR. FITZPATRICK: Objection. Form.

THE DEPONENT: No. Again, what I told Bob was that I would no longer give the presentation.

BY MR. SHEEAN:

Q. How long after you had that conversation with Mr. Walker did you continue to display, if you know, Exhibit 1 on your Plastics Pipe website?

A. I don't recall the date. That would be from that date until now, the date that I had the

conversation with Bob.

Q. It's your testimony that on the date you had the conversation with Mr. Walker you removed from your website --

A. No. It was on my website, and it's still there now.

Q. The butt fusion failures information?

A. If that's part of the presentation, yeah.

Q. So --

A. I thought the paper I had on my website was the RCP paper.

Q. Today. But my question is: How long after you had that conversation with Mr. Walker did your website continue to display criticism of butt fusion PVC joints?

MR. FITZPATRICK: Objection. Assumes facts. Form.

THE DEPONENT: I thought the paper on my website was the RCP paper.

BY MR. SHEEAN:

Q. Today. My question is: Starting with the date that you had this -- do you remember when you had this conversation with Mr. Walker?

A. A couple of years ago maybe. I don't recall.

Q. So after you had that conversation with Mr. Walker a couple of years ago, do you know whether or not for any period of time you continued to display on your website articles critical of fusible PVC butt fusion joints?

MR. FITZPATRICK: Again, objection to form.

THE DEPONENT: I don't recall. I know I updated it for the RCP presentation that I had given. I -- I don't know if that included the butt fusion information or not.

BY MR. SHEEAN:

Q. The testing that you display in Exhibit 1 from pages 42 to 60, which is UGSI718 to 736 --

A. Uh-huh.

Q. -- did you personally perform those tests?

A. No. Most of the tests were conducted by Jana Laboratories, and they were in the report. I obtained the data in a report that was authored by Jana Laboratories. A couple of the charts that I -- that are in here are taken from a UGSI publication.

Q. Which charts are taken from the UGSI publication?

A. These two. They don't have page numbers.

It would be after those, almost to the end of the butt fusions. Yeah, that one.

Q. So 734 and 735?

A. If that's what you say it is, yeah.

Q. Those -- those are taken from a UGSI publication?

A. Yes.

Q. And that's the stress versus time F2634 control eight inch PVC pipe and F2634 butt fused eight inch PVC pipe?

A. Yes.

Q. Okay. Other than those two slides, the rest of the slides that we discussed -- that I just mentioned, who performed those tests? You said Jana Labs?

A. Yes, Jana Labs.

Q. Do you know who made the butt fusion joints that were tested by Jana Labs?

A. The butt fusions were made -- polyethylene were made by Performance Pipe. The butt fusions of PVC pipe were made by a contractor or someone who was a licensed UGSI butt fusion person.

Q. Do you know whether or not the entity that made the PVC butt fusions joints was in good standing with UGSI?